GLEANINGS IN BEE CULTURE

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EDITORIAL

By E. R. ROOT.

THE G. B. LEWIS CO.'S FACTORY BURNED TO THE GROUND.

JUST as we go to press we have the following telegram from the G. B. Lewis Co., which will explain itself:

Factory totally destroyed by fire Sunday morning.
Watertown, Wis., June 20. G. B. LEWIS CO.

In the absence of any further details we assume that their warehouses and lumber-yards are still intact; and we also assume that the company will begin immediately to rebuild, although no statement to that effect has yet been issued.

This fire comes at an unfortunate time, as nearly all the bee-hive factories are overrun with orders. We ourselves have been running over time; and since this Lewis fire conditions will not be in any way improved for us. We extend to the Lewis company our sincere sympathy, and if there is any thing we can do to help, we shall only be glad to do so.

SEASON PROSPECTS.

THE reports in regard to the honey crop, as they have come in up to this time, have been quite conflicting, due to the fact that in many localities there is a great deal of white clover, while in others there is practically none of it. A trip of three hundred miles by road through Southern Michigan and Northern Ohio has reveal edthe fact that the c'over in the sandy regions seems to have been killed by the drouth last fall, while that in the clay soil is doing well. Alsike clover, however, is flourishing both in the clay and sand; in fact, this seems to be the greatest year known for alsike clover. The bees are working on it quite generally, although in one report from New Jersey a large field of fine alsike was mentioned to which the bees were paying no attention.

A large number reported an unusually good flow from fruit bloom.

HOW TO GET GRANULATED HONEY OUT OF EXTRACTING-COMBS.

IN the *American Bee Journal*, Dr. C. C. Miller, in his Questions and Answers department, tells how this may be accomplished by simply spraying the combs and giving them to the bees. When they are cleaned out dry, they are to be sprayed again until all the granulated honey is removed. Where there are no neighbors' bees he says it is a quicker job to set the combs outdoors and spray them, and let the bees rob them out, and then spray again until they are clean.

We might suggest, however, as a matter of precaution, that such combs be placed 200 or 300 yards from the apiary after the bees finally get started on them; for while the bees are robbing the combs out like this they are apt to make things "interesting" in the bee-yard for the time being. The further they can fly for stolen sweets the better it is for the bees at home.

THE BEARING OF LOCALITY ON THE LENGTH OF BEE FLIGHT.

REFERRING to some recent discussions in GLEANINGS, on pages 194 and 286, in wh'ch Mr. G. M. Doolittle is quoted as saying bees would fly from choice from 2 to 4 miles, the same writer in the *American Bee Journal* for June gives a number of instances where, in his own experience, they have flown anywhere from 2½ to 4½ miles. We gave it as our own experience on page 286, May 1st issue, that they will not go very much beyond 1½ miles in this locality, and this has been confirmed by others in similar localities; but we also stated that, in a hilly country, bees would go much further; that Mr. Alexander showed how his bees had flown five miles to different buckwheat-fields on hillsides. It is evident, as we have before stated, that bees have telescopic vision; and when they can see across a valley where there is a white patch of something that indicates bloom they will fly until they get to it.

It is a well-known fact that basswoods in New York bloom first in the valleys; then, later on, on the hilltops. As the hills of New York are small mountains as compared with most of the hills of Northern Ohio, this explains the length of the honey-flow.

Mr. Doolittle, in the above-mentioned article in the *American Bee Journal*, shows how his bees would seek out the first-blooming basswood in the valleys, and then, later on, go further up the hills for the later bloom. In the first case they went 2½ miles, and in the latter they kept going on up the hills until he had traced them 4½ miles from his home yard.

Here we have a case where locality is a marked factor in the length of bee flight. In a comparatively flat country the bees can not

see distant fields; and so long as there is pasturage at hand they will, according to our experience and observation, go only about 1½ miles; for by the time the pasturage is used up in the mile-and-a-half radius it will also be gone at the greater distances. But in York State, where the hills are in some cases several hundred or even a thousand feet high, the conditions would be different. The near-by pasturage would be used up first, provided the bees were in the valley; hen the bees would keep climbing the h ills, going further and further from home, until they had gone as far as Mr. Doolittle states.

This only goes to show that in some parts of York State more bees can be supported in one yard than in localities such as we have in Ohio.

Again, we have a recorded instance where bees have flown across a body of water seven miles to pasturage. In a strictly prairie country where there are no trees it is probable that they can and do go much further than in a more or less wooded country. In a discussion of this kind we must not loose sight of the bearing of *locality*.

EUROPEAN FOUL BROOD IN CALIFORNIA.

THE following letter, received from Dr. E. F. Phillips, in charge of apiculture in the Bureau of Entomology, will explain itself:

Mr. E. R. Root:—Samples of a new outbreak of European foul brood in Fresno and adjoining counties in California have just been received at this office. I think you would benefit the bee-keepers of the infected area by calling attention to this in GLEANINGS. This disease is new to that part of the country, and it will be well for the bee-keepers to know the danger. Any suspected samples may be sent here for identification. E. F. PHILLIPS.

Washington, June 12.

California bee-keepers, especially those in the adjoining locality, should bestir themselves at once; for unless European or black brood is checked it will nearly wipe out the industry before it can be brought under control. Ordinary foul brood, bad as it is, in our judgment is mild in comparison; and the sooner California bee-keepers recognize its awful virulence the better it will be for them. It spreads with tremendous rapidity, and, what is more distressing yet, it will sometimes come back after it has been cured.

It will be the part of wisdom if the bee-keepers of Fresno and adjoining counties will practice "shook" swarming. Hive the bees on frames of foundation, and melt up all the old combs as soon as the brood is hatched out.

If black brood should once get started in a yard of ours we would treat the whole apiary, irrespective of whether individual colonies showed the disease or not. To that end we would put every brood-nest on the top of another body containing frames of foundation, separating the two stories with a queen-excluder. Of course we would put the queen below; and as soon as the brood was all hatched out above we would extract the honey, if any, and melt up the combs.

The plan outlined will sacrifice no brood, honey, nor even wax. It will involve, of course, some extra labor; but in many cases, and perhaps all of them, there would be a corresponding gain in honey alone, and the prevention of swarming, to say nothing of the benefits to be derived in killing the germs of any possible black brood that may lurk in the combs. With the modern methods of wax-rendering one can secure practically all of the wax out of a set of combs. When the work is done right, the wax will pay for the foundation.

NON-SWARMING RACES OF BEES IN SWITZERLAND; ARE THE BLACKS LESS INCLINED TO SWARM THAN THE YELLOW RACES?

ON page 269 there was some discussion as to whether the black races of bees swarm less than the Italians of Switzerland. Editor Kramer, of the *Swiss Bee Journal*, had been quoted as saying that the swarming problem in Switzerland was solved by substituting the native blacks for the "hot-blooded Italians." In our footnote we called attention to the fact that the Swiss bee-keepers run almost exclusively for extracted honey, and, what is more, use very large hives or "chests," as they are called in that country. We gave it as our opinion that, with any race of bees, there would be but very little swarming under such conditions. In proof we referred to the Dadants, of Hamilton, Ill., who use the large Dadant hives and Italian bees, yet with hardly more than two per cent of swarms in a season. We asked for the opinion of Mr. C. P. Dadant, and his reply was published on page 335 of our June 1st issue. In this article he said, in referring to the black bees of Switzerland, "I do not believe there have been any special characteristics bred into any race of bees by artificial selection thus far. . . I do not believe there is a marked difference between the common bees, and the Italians especially, in swarming." Then he went on to show that the Swiss and French are succeeding in the prevention of swarming even better than the Dadants by "following the Dadant ideas."

We also have an article from the same writer, in the June issue of the *American Bee Journal*, on the same subject. During the interval he has given the matter considerable study and investigation. He introduces considerable testimony from authorities, both in this country and in Europe, to show that there is no practical difference between the common black bees and Italians in the matter of swarming *under like conditions;* but nearly all the authorities mentioned speak of the Carniolans as being excessive swarmers; then he winds up his article by saying:

Our friends across the Atlantic are producers of extracted honey, like myself. Like myself they use very large hives, perhaps not universally, but quite generally. They will, therefore, much more readily succeed in decreasing the swarming impulse than most of our American producers. But it must not be taken for granted that our Swiss friends are the only ones who succeed in preventing swarming. It is almost universal in those countries where large hives, the production of extracted honey, and house-apiaries or shelters, are used. In addition their climate is much cooler than ours, as nearly all of Europe is north of the 40th degree of latitude, while almost the entire United States is south of the 45th. This fact alone would explain the greater success in the prevention of swarming in Europe by artificial means.

A LITTLE TRICK IN INTRODUCING VIRGINS OR VALUABLE LAYING QUEENS.

IT is well known that young bees are much more kindly disposed toward strange queens or bees than old ones. To that end we can take out a frame or two of bees and hatching brood and put them in another hive on a separate stand. At the end of 24 hours, all the old bees, or those that will be hostile toward an old queen (providing the weather is such that they can fly) will have gone back to their old home. We can now with comparative safety introduce the valuable queen or a five or six day-old virgin, because in such case we introduce in the regular way, letting the young bees that are left release the queen by eating away the pasteboard and the candy at the end of the cage. Experience has shown us that it is bad policy for the apiarist to do the releasing. Every time one opens the colony he disturbs the bees more or less; and when a new queen is released at such time there is much more chance that the bees will attack her by balling than if they do the releasing themselves.

HOW TO SELECT A HIVE; THE MAN AND THE LOCALITY; WHY GLEANINGS DOES NOT RECOMMEND ANY PARTICULAR HIVE OR FRAME.

A FEW days ago a bee-keeper came into our office and said that, after having tried the divisible-brood-chamber hive, he was delighted with it. He inquired why we did not recommend it in these columns in preference to any other hive, for he was sure nothing else could compare with it in flexibility and economy of management. We replied, saying that we did not believe it would be good policy for us to recommend to every one any particular hive or frame, as so much depends on the man and the locality.

"But," he asked, "what harm can there be if you give *your* individual preference, allowing the general public to make its own selection?" Right here we explained that some would follow our advice as to the selection but not our method of handling, and come to grief, and some others might follow it, right or wrong.

It has occurred to us, however, that we might make some general suggestions that will serve in a measure to solve the problem for intending purchasers.

In the first place, every thing depends on whether one expects to produce comb or extracted honey; whether the season is short, covering a period of three or four weeks, or whether it is prolonged, extending over some months. Much will depend on the markets.

It would be folly to produce bulk or chunk comb honey and attempt to sell it in our Northern States, notwithstanding such product finds ready sale in Texas.

Again, some markets take to tall sections. Some will accept dark buckwheat comb honey, while others will not have it at any price. Some take mainly extracted.

If one expects to keep bees in some one of the Northern States where there is a short flow from clover, and clover only, and the market for comb honey, either in tall or square sections, is good, we would recommend either the eight-frame Dovetailed hive with plain square sections or the Danzenbaker with closed-end frames and tall sections. If it is a locality where the nights are cool and the days warm, we would advise the Danzenbaker in preference to the other hives with open-end frames. If our prospective bee-keeper has made bee-keeping a special study, and wishes to secure a gilt-edged product, we would advise the Danzenbaker throughout.

If, on the other hand, one has had considerable experience in keeping bees, and wishes to manage a series of outyards for the production of either comb or extracted honey, with a minimum of labor, he possibly would do well to adopt the divisible-brood-chamber hive. It is true it would cost some more for the same comb surface, yet in the hands of the skilled bee-keeper it will produce some excellent results. But if foul or black brood, or any other brood disease, happens to be in the locality, we would never think of adopting such a hive; for if one is likely to get one of these diseases in his apiary, the divisible-brood-chamber proposition would be a fright, for it is not one that will permit of the handling of all its frames with economy of labor.

If our prospective bee-keeper is going to locate in the South or the West India Islands, and run for extracted honey, we might recommend the Jumbo hive. This is standard in every respect, though it is 2⅛ inches deeper than the regular Langstroth. With such a hive one can raise an immense amount of brood and bees, and it may be said to be practically a non-swarmer if extracted honey is produced.

If one is engaged in some profession, and can be at his yard only nights and mornings, and wishes to raise a little chunk honey for his own and his neighbors' use, we would recommend the ten-frame Dovetailed hive with the Hoffman frame for extracting, tiering the same up two, three, and even four stories. This kind of proposition, perhaps, is about as nearly automatic as any one can adopt. There will be little or no trouble from swarms, and one can do all the work necessary nights and mornings. Indeed, he will not need to go near the hives oftener than once a week, even during the rush of the season. These three-story hives for extracting are by all means the simplest to handle, and for the ordinary farmer there is nothing better. He can raise his own honey, and, what is more, will probably not have to be called from the harvest-field to take care of swarms. When the season is entirely over he can take off his honey in the shape of solid cards of full-sized Langstroth frames, and then cut out chunks for himself and for his neighbors whenever he chooses. If he stores his honey in a warm room not subject to too much variation his neighbors will come miles and miles to get it, because it will become richer and mellower as it becomes older.

STRAY STRAWS

BY DR. C. C. MILLER

LAST WINTER I fed a good deal of alsike hay, and liked it exceedingly—as did the stock. The only objection I have heard to it is that it doesn't yield as many tons to the acre as red clover.

TEXAS is now the onion State, claiming to produce onions as good as the Bermuda onion. With 6000 acres devoted to the fragrant bulb, there ought to be a still further increase of the honey crop.

WHITE, red, yellow sweet, and alsike clover and raspberry all showed first bloom on the same day, June 5. [Yellow sweet clover is just starting in our locality, and the bees are working on it strong.—ED.]

KRAMER insists that it is not enough that a colony be strong and queenless to start good queen-cells, but that a colony should be chosen which shows itself in the right humor by having already started cells of its own accord. [Kramer is probably right.—ED.]

SECTIONS should be perfectly square, and the foundation in them should be cut perfectly square, just as E. D. Townsend says, p. 365. But the danger of having one corner of the foundation strike against the side of the section is greatly reduced by using a bottom starter.

L. S. CRAWSHAW, *British Bee Journal*, 69, says the swarming trait "is of value, even if only for the purpose of increase." L. S. Crawshaw, I like you, but please don't talk foolishness. Swarming eliminated, we could increase as much or as little as desired, and always from choice stock.

YOU ASK, MR. EDITOR, if I am sure cork chips are ever so much better than blocks of wood for bees' watering-places, p. 357. Oh, my! just try them once, and you will never ask such a question. Neither did they cost me a cent. Grocers who get them as packing for grapes are glad to have me take them out of the way.

G. LEHZEN, the veteran German authority, says, *Deutsche Imker*, 381, that bees are more diligent after being hauled. If any one doubts this, let him trundle a colony on a wheelbarrow for an hour in the evening, and he will notice the difference the next day. But in the next breath the beginner is told to refrain from continually disturbing bees.

PLEASE TELL US how many sections an hour can be filled by the melted-wax plan. [We have put in full sheets with melted wax at the rate of 200 an hour. Mr. G. J. Yoder, when following his plan of fastening the sheet at the top and two-thirds the way down the sides, as described in the April 1st issue last year, is able to fill 3000 sections in one day and put them in the supers.—ED.]

A GERMAN trick with robbers is to close the entrance with mud or clay and then thrust a lead-pencil into it to make a passage for a single bee. [This looks as if it might work.—ED.]

AN EXPERIENCED hand, with a Daisy foundation-fastener, can put top and bottom starters in sections, and fill them in a T super (not separatoring), at the rate of 24 sections (48 starters) every 5 minutes, and keep it up all day.

REFERRING to Swan Anderson's experience, p. 320, a correspondent wants to know whether it is a defect of the artificial-stone press to have the foundation worked by the bees into drone comb. I don't know. With the incipient cells of the same size, I should expect the same result in the finished comb, no matter how the foundation might be made.

WESLEY FOSTER, p. 333, says the bottom-starter in a section should not be over ½ inch. I have good success with ⅝ inch. But I use thin foundation. Perhaps he uses extra thin. [Say, you fellows are splitting hairs fine. If a starter is made of "extra-thin" foundation, perhaps ½ inch would be high enough; and possibly ⅝ would be too high. If one used an ordinary "thin super," then ⅝ would not be too high, perhaps.—ED.]

I WISH I had known enough, when giving the plan of uniting by setting one colony over another with newspaper between, to utter a caution that the upper colony should not be in an excited condition. An esteemed correspondent put a freshly hived *swarm* thus over, and it was promptly smothered to death. I generally punch a very small hole through the paper; but I don't think that would have saved it. A swarm is in a very excited condition, and needs a great abundance of air. If the colony had been put over the swarm it would have been all right.

WM. FINDLAY says his bees build down comb with deep space and opening, front and rear (Blunk fashion), and wants to know how to make a bottom-rack to prevent building down. Just now the favorite is a plain ladder. The two sides, running from front to rear, are 17 × ⅞ × ½. Cross-pieces (nailed on the ½-in. side of the sides are 10½ × ½ × ⅛, with a ½-in. space between them. This for an eight-frame hive. Possibly a shorter rack might do, leaving more open space in front, but I haven't tried it. [While we understand just exactly how your rack is made, we think it would be better if you would send us by express one of them so that we can have an engraving of it made.—ED.]

MR. EDITOR, that divided skirt you speak about photographing, p. 374, wouldn't show in a photograph—at least not as worn in this locality. The divided skirt simply takes the place of the ordinary petticoat, worn with an outer skirt over it. But if I were a woman there would be no outer skirt on a hot day. [Even if the outer skirt is not worn, the divided part, as usually made, is neat and be-

coming, and on a hot day we see no reason why our women folks who have to do with bees should not be willing to wear it, especially when accompanied by a male relative. One thing sure, and that is, the men folks would never be willing to submit to the inconvenience of a long skirt, to say nothing of stings.—ED.]

AN EASY WAY to make a nucleus for a beginner who doesn't want to look for a queen: From a full colony in hive A, take one or two frames of brood with adhering bees and put into an empty hive B, adding a frame with some honey. Set B in place of A, and set A where you want your nucleus to remain. Four days later, if eggs are found in B take all but one or two frames with adhering bees from A to put in B, and your nucleus is left in A. If no eggs are found in B, let the hives swap places, and there you are with your nucleus in B. [Could not that same beginner save time by finding the queen in the first place rather than go through all this hive manipulation, especially should Her Majesty get into the wrong hive? Of course, we understand it is not easy for a beginner to find the queen; but if he is going to do anything with bees at all he had better learn first as well as last how she looks, and how to locate her in the hive. He can scarcely keep bees unless he does.—ED.]

I'D LIKE TO BELIEVE that W. M. Whitney is right in thinking that sufficient ventilation will always overcome the tendency to greasy sections, p. 362. The Punics were the worst bees I ever had in that respect. I really wonder if the grease could have been ventilated out of their sections. [Now that you recall it, we remember very distinctly that there was a general complaint against Punics because the capping of their honey was so dirty-looking — apparently travel-stained. We remember very distinctly that the combs of two or three colonies we tested looked dirty, and the cappings themselves presented any thing but an inviting appearance, even though the honey itself was clover and basswood. The significant fact was that other colonies of Italians and Carniolans under like conditions showed white cappings. We say "like conditions," because, so far as we can remember, they were the same. Like Dr. Miller we would doubt whether sufficient ventilation would change this trait in Punics.—ED.]

E. D. TOWNSEND, I don't wonder that your sections swelled if you poured water into the groove from the spout of a tea-kettle. We use a fountain syringe to wet ours, the water very hot, pinching the rubber tube with the thumb and fingers so as to allow a very small stream of water that wets just the groove and nothing else. Even this makes the sections swell enough to make them tight in the crate, so one end of the crate must be loosened to get them out easily. We have wet many thousands in this way with great satisfaction. [When we visited L. A. Aspinwall a year ago he showed us a little trick of the trade of how to run hot steam through the grooves of the sections. He puts a shallow pan with a little water in it on the stove. This pan is a little less in length than the section blanks before being folded. When the water is boiling hot and steaming well, two or three handfuls of sections are placed lengthwise on their edges, across the top of the pan. There should be enough of them to cover the entire pan. The steam will now rise up through the grooves of each section in the course of a minute. They may now be taken off, when they can be folded with perfect safety, and without any swelling of the joints. Mr. Aspinwall showed us that it is really quicker, and far better in results, than any hot or cold water poured along the grooves, for the reason the steam rises almost instantly through the *inside* of the triangular grooves in the sections. Hot steam so applied is a great deal better than hot water, because it does not raise the grain on the outside of the section. Of course a kerosene-stove might be used for heating the water in a workshop.—ED.]

"WE KEEP corn and soaked oats constantly before the fowls," page 353. Bro. A. I., how long can you keep that up without making them too fat to lay well? [Well, doctor, we have kept it up in Florida, and kept it up here in Ohio, for the last two years, and I think we get about as many eggs as those who go to the trouble of feeding their chickens regularly two or three times a day. If they are permitted to get very hungry, and then given all they can "cram," I presume they sometimes overeat; but where they have the grain so they can go to it at any time, my opinion is that they seldom gorge themselves. I have always fed the wheat with the corn and oats until the present season here in Ohio; but when wheat got to be so expensive I gave them only the corn and oats to see what the result would be, and I find they lay as many eggs, or at least nearly as many, as when they had the wheat also. Where they can have their choice they seem to prefer wheat; and, as nearly as I can make out, they use two bushels of wheat to one of corn, and, say, one of oats. A few of the old hens get to be pretty fat; but my strain of Leghorns that I had down in Florida—those that have some game blood, and especially where they have large yards, or, better still, where they are permitted to go outside of the yard, and ramble through the woods, seldom get too fat. If confined to a smaller inclosure I think it might not have worked as well; but it is a very great saving of time to have nothing to do with the feeding. You know I am working for a plan, doctor, where there will be "nothing to do but gather the eggs." And, by the way, my experience has been that, where hens are fed just so much every day, sooner or later somebody forgets to feed them. I have noticed that whenever the poultry suffer from a lack of food the owner is sure to "suffer" also in a lack of the usual output of eggs.—A. I. R.]

NOTES FROM CANADA

By R. F. HOLTERMANN.

COMB-HONEY LOSSES IN SHIPMENT AND THEIR EFFECT ON THE TRADE.

The footnote, May 1, page 262, is timely. When the dealer's profits vanish as a result of breakage he does not feel like making another investment. A dealer must also make a profit in proportion to his risk. This profit must largely come out of the producer. Lessen the risk and the net proceeds to the producer will increase.

FOUL-BROOD-INSPECTION WORK IN CANADA.

The foul-brood situation in Ontario is a burning subject. It appears that, for the sake of economy, the Ontario government has practically decided that, except in aggravated cases, the inspectors are not to go out until May 15, and then for only a limited number of days. The idea was that foul brood in its early stages can not readily be detected until brooding is carried on rather extensively. This is quite true; but in the meantime the disease may be spread very much by neglected colonies that have dwindled or died, and that have diseased honey which may be robbed out. If one or the other plan had to be followed it is just a question as to whether the early inspection would not do more good than the later one. At first thought the former would appear to me to be preferable, because foul brood would likely be discovered in the hives already mentioned, and robbing prevented. Again, the careless bee-keeper without inspection uses for swarms the combs upon which the bees have perished, and this would be prevented. Even when there is but little brood in the hive, badly diseased colonies could be detected. It would be only the slightly affected colonies that might pass muster.

I quite agree with the *Canadian Bee Journal* and many of its writers in upholding early inspection; and with a Provincial apiarist now appointed, whose duty it should be to advise upon such matters, we may see a good apicultural policy develop. The present stand taken by the Provincial government, that only $2500 be spent this summer for foul-brood inspection, is also a mistake. A wealthy province like Ontario can well afford to spend $10,000 in a season if, by that expenditure, foul brood can be brought under control more quickly. There are portions of this province in which there is every likelihood that foul brood exists, but which have not been inspected, owing to lack of men and means. This should not be. We are, of course, quite ready to give the Minister of Agriculture and the Department credit for the increase within three years of the grant for this work from $600 to $2500 per annum, but it is not yet enough.

Jacob Alpaugh, one of the inspectors, said recently that we needed a thousand inspectors. When I demurred he said, "Years ago you and a lot of others opposed my views given in convention, but you had to come to it." I admit that; but I do not expect to change my views in this: I would appoint no man who is not competent, and I feel sure that at present one thousand good men could not be found. The Ontario Bee-keepers' Association could well devote some time at its next meeting in Toronto, in November, to a discussion as to the most efficient manner in which a foul-brood inspector should carry out his duties, and by all means let *laymen* take part. Any thing that will not stand the light of cool deliberate debate and reasoning should be eliminated. No one need be ashamed to learn in this matter. The best of us make mistakes, and all should be open to advice given in a proper way. A wise man will follow advice given in even an improper spirit if such advice is sound.

THE SEASON'S PROSPECTS.

At this date, May 27, the season in this section of Ontario, and, in fact, over a very large portion of Canada, has been decidedly backward, with very much rain. In the neighborhood of my apiaries, even in backward seasons, the fruit-bloom is always over, and the bees robbing at this date. At present, however, plum blossom is just over; the cherry and plum are in full swing, and the apple-blossoms are only just beginning to open. This means that fruit blossom will extend over the first week in June, at least. Owing to the favorable winter and wet spring, white, alsike, and red clover are in the very best condition. The basswoods have not yet unfolded their story as to the number of blossom-buds they will bear; but a dry fall is not favorable for the setting of many basswood-buds for the following summer.

A very much larger area of land is likely to be devoted to the growth of buckwheat. This is owing to continued rain, and the difficulty the farmers have had in getting on their land for seeding purposes. With us, buckwheat need not be sown until the first week in July.

This is one side of the apicultural outlook, and it seems rather favorable. We may get a dry summer following the wet spring, for such is very often the case.

When we examine the condition of bees, however, the outlook is not so favorable. Colonies packed on their summer stands, and with plenty of stores, have kept fairly well abreast of vegetation. Unpacked bees, however, and particularly those that have been at all scarce of stores, or if they have stood in exposed places, have not built up well. Inactivity of the worker-bees, since there have been few good days for the bees to work, has resulted in inactivity on the part of the queen. We know, of course, that the fairest outlook may end in empty supers. On the other hand, unfavorable conditions may result in a rapid change and a bumper crop. This is not surprising when a colony has been known to gain 24 lbs. in one day in a clover flow. Heat, moisture, and electricity in the atmosphere, combined with a moderate amount of bloom and bees, can give wonderful results in a very short time.

BEE-KEEPING AMONG THE ROCKIES.

By Wesley Foster, Boulder, Col.

With the rapid spread of Fletcherism we hope to see the dislike for candied honey go. The thorough chewing will make a melting-tank of the mouth, and our efforts at keeping honey liquid will not be necessary.

BIG HONEY CROP.

Mr. Dow, p. 344, June 1, says that in Massachusetts they do not get yields of 200 or more pounds of comb honey per hive. We do not get them here either. The average yield would be a good deal under 50 lbs. If I could average 50 lbs. of comb honey per hive, bee-keeping would be a very profitable business here in Colorado. Fifty pounds in Massachusetts is much better than the same yield in Colorado.

HOLDING FOR BETTER PRICES.

The experience of western bee-keepers is that it does not pay to hold honey for a rise in price. The honey that is sold in August and September brings the best figures when the average of several years is taken. There are bee-keepers who have lost amounts running into thousands the last few years by holding their honey. The sooner we can get our honey ready for shipment the better, and then sell for a fair figure. No one can blame us if we try to sell, and fail. There were a few such out here last year. Then some counted on the local market being better; but honey went down, and that hardly stimulated consumption enough to clear up the honey on hand.

WAX-PRESSES AND PROPOLIS.

With the increased use of wax-presses our beeswax will contain more propolis than it formerly did when high pressure was not used. Since beeswax is used in so many commercial articles that are injured by the presence of any propolis, it behooves the bee-keeper to consider the importance of having a clear wax if cheaper substitutes are not adopted. The presence of propolis is indicated in several ways—by a grayish color, and lack of polish surface when rubbed. The wax is more crumbly, and is not so firm and brittle. A maker of floor polish had considerable trouble with the polish sticking to the shoes when walking over the floor. We traced the trouble to the wax, which showed signs of containing propolis. When a fine clear beeswax was used the trouble was overcome. The price of beeswax is kept up very largely by its use in polishes, candles, etc., and the matter of supplying the trade with a pure article is highly important to bee-keepers.

[Some extensive producers use a large vat of boiling water for melting the combs out of frames. In this way the wires are not broken and the frames are cleaned ready for new foundation. But, in view of the propolis being melted from the frames with the wax, it would seem the wiser plan to *cut* the combs from the frames, wires and all, and then boil the frames separately at another time it they need such cleaning. We doubt whether much propolis gets into the wax when the combs alone are treated.—Ed.]

PROSPECTS.

In most localities prospects are good for a fair yield of honey. The spring has been backward, but frequent rains brought out the wild flowers, furnishing abundance of pollen. and the bees have built up very rapidly in spite of the cool cloudy days. Swarming commenced around Denver a little about June 1. It is encouraging to see seven and eight combs of brood in the hives by June 12. The period from fruit bloom to alfalfa bloom is usually when our bees lose; but the dandelions, white clover, and wild flowers came with the almost daily showers, and the bees responded by collecting an abundance of pollen and considerable nectar. I never knew the colonies to be in better condition for the harvest, and, though the loss has been far heavier than usual, Colorado will produce some fine comb and extracted honey if things remain favorable.

THE GROCER'S PROFIT ON HONEY.

Grocers tell me that they can not do business on less than 20 per cent margin. Some figure this on the selling price and some on the cost; 20 per cent on the selling price is 25 per cent on cost. If a grocer pays $2.75 for a 24-lb. case of comb honey he can sell it at 15 cts. straight, and make 85 cts. on it, barring all loss by breakage or candying. This is 31 per cent profit to the grocer on cost price, which is a liberal profit, and is a much larger profit than grocers make on most things. Very few grocers, I find, are willing to handle comb honey if it costs $3.00 per case, or 12½ cts., and sells at 15 cts., which gives them a 20 per cent profit on cost price. They say the loss from candying and breakage is too great, and unless a larger profit is made it does not pay to handle it at all. The grocer will handle honey on a 20-per-cent margin if he has calls for it; but I find that not over ten per cent of the people ever eat honey. There are usually one or two families who take most of any one grocer's honey. If more called for honey the grocers would buy more liberally, and would be content with a smaller margin. The way to get every one to eating honey is to canvass from house to house, giving away samples. Another plan is to demonstrate in grocery stores, giving every one a taste who comes in, and selling the honey for the store in which you demonstrate. I am confident the plan would win in the end. I have seen the increased sale by keeping stores supplied the year round with honey displayed in a prominent place. Let us give every one a taste the way the first bees returning laden do according to E. L. Pratt.

CONVERSATIONS WITH DOOLITTLE

AT BORODINO, NEW YORK.

THE HIVE OR THE MAN.

"I have decided to go into the bee business. Will you tell me which is the best hive to use, Mr. Doolittle? An old man who has kept bees, but has none now, tells me if I start with a good hive my bees will do well, as the hive used has much to do with any bee-keeper's success."

"Which would mean that, if you started with the Danzenbaker, Gallup, Dadant, Heddon, Langstroth, or some other good hive, you would be likely to meet with success, no matter how poorly you attended to the bees, nor how ignorant of the first principles of bee-keeping you were. While a good hive may have much to do with the results of bee-keeping, the *man* has much more to do with the success or failure. Look at the man with his choice stock. If he has only a good modern barn to house them in, does he let them care for themselves otherwise expecting a profit from them?"

"I do not think so."

"No; he spares no pains to have them properly cared for, and gives them every chance in his power that tends toward success. Yet three out of four such men will expect a good income from bees, should they get a 'bee in their bonnet,' if they only have them in good hives, even if they do not do more than to hive the swarms, if any issue, and put on and take off the supers."

"But this old man told me if I had my bees in good hives they would largely take care of themselves."

"Which but shows that he is living in the past. That old idea that 'bees work for nothing and board themselves' still clings to many of the past generation, but it must be banished from the thoughts of the one who would meet with success in the twentieth century. Successful bee-keeping means work, and intelligent work on the part of a man who has brains enough to know that he must leave no stone unturned that tends toward success. A *good* hive in the hands of such a man is a power which rolls up tons of honey, and shows to the masses that there is something in the bee business. Such a man will have his bees in readiness for the honey harvest when it comes, and do things in just the right time to secure the best results."

"I suppose that those hives which you named have frames in them which are movable, do they not?"

"Certainly. All good hives have movable frames."

"What advantage has a movable-frame hive over box hives? or over hives like the Miner patent, which have guides so the bees build their combs straight with the rows of holes in the top leading to the supers?"

"Much, every way, in the hands of a skilled apiarist; but none at all with the man like the one who has been advising you to get the best hive, for he would never handle the frames to take advantage of the benefits derived from being able to keep good queens in all his colonies at all times by making the strong colonies help the weak, by equalizing the stores where a part of the colonies were lacking, by being able to make his increase as he desired or preventing swarming entirely, by shaking the bees from their combs of brood on combs without brood, etc."

"Do bee-keepers generally practice all these things which you have enumerated?"

"The successful ones do. What are movable frames good for if not for the above purposes? Still I must admit to you that we have many all over the country who style themselves bee-keepers who know little or nothing of what is going on inside of the hives during the whole season. If you are to pattern after these, instead of after the successful ones, then the old Miner hive is as good for you as any thing you can have. Yes, better; for you will not have to regret so great a loss of cash when you write failure as your record, after your bees are all dead and gone. Following such a plan brings plenty of candidates for 'blasted hopes.'"

"But I did not suppose there was so much in the bee business to make it a success."

"Now, look here. You are a dairyman, I believe."

"Yes. That is, I keep cows for a living now, and I wished to add bees as I supposed there would be but little more work."

"Ah! I see. You thought that, by entering the ranks of apiculture, you could save the fuss of milking the cows twice a day, carefully straining this milk, and hauling it to the creamery or the cars, feeding and watering those cows during the winter months, and driving them to and from the lot at each milking-time during the summer. The average successful bee-keeper does not spend the time on ten colonies during the year that you spend on one cow; and when the profit from ten colonies is compared with that from one cow the chances lie with the bees, taking a term of years together."

"But you don't intend to say that colonies need overhauling every day, do you?"

"No, not that. What I mean is that, when there is need of looking inside of the hive, do it, and just at the right time. In early spring see that all colonies have plenty of honey; and when pollen becomes plentiful see that all have good queens. Later on, see that there is plenty of room in each hive, so that the swarming fever will not be contracted. Put on supers at the beginning of the first bloom that gives a surplus of nectar. Remove the sections when completed, and be sure that the bees have plenty of stores for winter, and that they are properly prepared for their long winter's nap as early as the first of October. What I wish to impress on your mind is this: A thorough practical apiarist will succeed with almost any of the hives in use by the up-to-date bee-keepers, while a careless slipshod man will not pay his way with the best hive ever invented."

GENERAL CORRESPONDENCE

EXTENSIVE EXTRACTED-HONEY PRODUCTION.

A Full Power Equipment at Each Apiary; a Valuable Article.

BY E. M. GIBSON.

On page 273, May 1, Mr. Sires asks, "Why can we not have more articles from the large honey-producers, describing the equipment used in operating and handling bees and honey on a large scale, such as honey-houses, extracting-houses, etc.?" No doubt 99 out of every 100 would answer, "Lack of time." I do not know that I could be classed among the large producers of honey; but I have three apiaries, in each of which there is an eight-frame extractor with power attachments. I have not had the engine installed in my last house built last winter; but I have the foundation built, and all the necessary arrangements made to receive it. I can see no economy in hauling machinery back and forth. I also have every other appliance to equip each house. When I start for an outapiary, about all I have to think of is the lunch-box which I have been fortunate enough never to forget.

I have rock foundations for my engines, built from the cellar bottom up to the floor, with bolts five feet long imbedded in the rock, and fastened to the skid which the engines are built on. Above the floor is concrete, 17 to 20 inches high, and large enough to accommodate amply the engine. The engine raised above the floor is more easily watched, to see that the sight oil-cup does not get empty, to clean, etc.

I do not use the device sent out with the extractors for tightening or loosening the belt. I have a pulley, the kind used for window-weights, fastened to the rafters overhead, directly over the idler on the extractor, and another pulley, also fastened to the same rafters directly in line with the first pulley. A rope is attached to the idler, and passed through the before-mentioned pulley, and down to a foot pedal easily in reach of the foot of the decapper, who can manipulate the idler with both hands full. The idler is put on so that the belt is tightened from the under side. On the floor is fastened a ratchet so the belt can be made as tight as desired. When the decapper has three frames ready for the extractor, and is about to start on the fourth, he can kick the pedal out of the ratchet; and by the time the fourth one is ready the extractor will have slowed down to about the right speed for the operator to reach the brake and reverse the baskets, when the foot again tightens the belt. When the seventh frame is ready, and the operator is about to start the eighth, the pedal is again kicked off and the machine left to slow down; and, if not quite stopped when the eighth frame is finished, will be running so slowly that but little effort will be required to stop it.

COMBS SHOULD NOT BE REVERSED MORE THAN ONCE.

Here is the place to digress long enough to correct Dr. C. C. Miller and A. I. Root in relation to reversing the baskets more than once to prevent breaking the combs. This idea looks feasible in theory, but does not work in practice. But few if any will believe this, however, without testing it. The discovery was made by us by accident since using the power extractor. Since reading an article by A. I. Root several years ago on that topic I have practiced this plan with new combs. Last summer the person operating the machine, which was filled with new combs, forgot to use the foot pedal, and the machine got under full speed. The operator thought the combs would be ruined, but, to his surprise, not a comb was injured. We then gave the matter a test both ways, and broke far less combs by reversing but once than by two or more times.

I think this can be accounted for in two ways. First, in reversing the baskets several times the combs are bent back and forth to such an extent that they are weakened; second, in once reversing the body of the honey itself on the reverse side through the action of the centrifugal force, it has a tendency to support and stiffen the cell walls, and this helps to support the entire comb. A demonstration of the facts can be made by any one, as the honey season is at hand.

I hope some one will give the matter a fair trial, using combs of the same age, filled and capped as nearly alike as possible (decapping weakens combs to some extent), and, if possible, use a power-driven extractor, letting the machine run to its limit in each case. This will give the same speed in each trial more evenly than can be done by hand.

Returning to Mr. Sires' inquiries, I would say I do not use storage-tanks. The extractor stands on the floor, and the honey-gate is left open while extracting. The honey passes through a hole in the floor on to a strainer covering the whole top of a tank holding 2500 lbs. From here it is drawn into cans, and the tops screwed down with a screw-top wrench. I allow my honey to *ripen in the hives instead of in storage-tanks.*

Some one may make the objection that it does not pay to put money into machinery to lie idle nine months out of twelve. How about the farmers of the country, who have millions invested in implements which they use but a few weeks during the whole year, and yet they would not think of going back to old methods. I know of bee-keepers in this State who are in the business to stay, who are still using old home-made rattle-traps for extractors from which the combs have to be taken out and turned; old dilapidated hives of different sizes in the same apiary; gunny sacks for honey-houses; tin cans for smokers, and scores of other just as ridiculous makeshifts.

GASOLINE POWER VS. HAND POWER.

They say figures will not lie. Let us try a few. I pay my male help $50.00 a month and board, and presume that is the average wages over the country. At the present prices of provisions and the extra work entailed, I think $4.00 per week would not be too much for board. Extracting will last two and a half or three months—call it two and a half, and we have the sum of $165. An up-to-date large-sized eight-frame extractor with power attachments will cost $51.00; gasoline-engine to drive it, $60.00. Freight on both, if you are as far from the manufacturers as I, will cost $25.00, making $136. A man can do other work than turn the extractor; but it will be readily conceded that one helper could be dispensed with in an apiary of 250 or 300 colonies of bees if it were not for running the extractor; so we are paying $165 for the season's work of running the extractor, which is the hardest job about the house, except, perhaps, the handling of the filled cases. After the season's work is over, your man and the money you have paid him are gone, and, on the other hand, $136 has been paid out for machinery, adding a mere pittance for oil and gasoline; and if you have used your machines as you should they are practically as good as new. I do not know how much gasoline the engines do consume. The amount is so trifling that I have not taken the time to test it. I have used one of my engines and extractors two years. I was examining them a few days ago, and I could not see that the bearings were worn at all; and if I were offered new ones for them I would not go to the trouble to change for the difference unless new inventions had been added to enhance their worth.

Some say there are too many failures to have so much money invested; but my experience has been that a business that does not pay to do well does not pay to do at all. Perhaps one will not realize so large a per cent on the money invested as some of the Standard Oil or Steel men; but if one keeps abreast of the times, gets started right, and keeps right, and has his dish right side up when it does rain porridge (or honey), one will average up pretty well with the most of business ventures; and if not, something is wrong. That person has missed his calling, and had better seek some other vocation.

Jamul, Cal., May 18.

[What Mr. Gibson says regarding the value of power extractors and their economy over hand extractors is borne out by the statements of other users of power-driven machines; for there are some four or five dozen bee-keepers in the United States to-day who take their honey in the same wholesale manner. Those who have written in say that there is not only a larger output of honey from each comb—that is, cleaner combs after extracting—but there is a marked economy in the cost of securing the product.

In the matter of the cost of production, human labor figures generally as our greatest item. Where this can be materially reduced by machinery, it pays well to use it. But this is not all. Competent help very often can not be secured at *any* price. Bees are neglected, swarming follows, with the result that tons and tons of honey are wasted that might have been taken. While the initial cost of a power outfit is a great deal larger than that of a hand power, the former will generally pay for itself the first year, for Mr. Gibson's figures are not unusual.

Our correspondent brings out the question whether it pays to reverse often during the process of extracting, or to reverse only once. He presents a couple of good arguments in favor of the latter. This is a live question, and we should like to have some of our extensive producers tell us what their experience has been.

Our correspondent also brings up another question that is equally vital—whether it pays to put in a large investment that will be used only two or three months in a year, and then have it stand idle the rest of the year. At first thought the average bee-keeper is inclined to say it will not; but when we stop to consider that large successful manufacturers buy machines that are used only about one hour a day, and that farmers buy agricultural machinery that will be used only one or two weeks in the year, and that they consider it pays them to buy such machines, the bee-keeper himself may well take a hint.—ED.]

HOW DOES HONEY RIPEN?

Ripening Not Mere Evaporation; some Evidence to Show that the Nectar has Lost half its Water by the Time it Reaches the Hive; an Interesting and Valuable Series of Observations.

BY DR. BRUENNICH.

The question of the ripening of honey, as it is considered by most of our bee-keepers, needs correcting. The up-to-date bee-man knows that nectar contains much water, and he explains to the novice that the vigorous ventilation produced by the bees fanning at the entrance evaporates this water so that the honey becomes more and more condensed. The question can not be solved as easily as this, however, for the whole process of the ripening of honey is more complicated.

We know by the classic researches of my compatriot, Planta, that nectar contains on the average 80 per cent of water and 20 of cane sugar. It means a stretch of the imagination to believe that it is possible to remove such an amount of water by simple ventilation at the entrance with a temperature of 98 or 99 degrees; for, while this ventilation at the entrance may be energetic enough to blow out a candle, the current of air in the spaces between the combs will nevertheless be very slight, considering the great friction of such narrow openings.

At first I will prove mathematically the impossibility of thickening the honey by evaporation only. For this purpose I herewith

give the notes which I made in reference to my colony on the scales from May 4 until May 20, 1907. In explanation I will say that, during the season, that is, from April to August, I weigh, every day, twice—once early in the morning before the flight, and again in the evening when all the bees are home. All the weights given below are in kilograms.* The results of those 17 days are as follows:

	Increase during the day	Decrease during the day	Decrease during the night
May 4	2.150	—	0.350
" 5	2.400	—	0.550
" 6	—	0.030	0.370
" 7	2.700	—	0.450
" 8	4.200	—	0.850
" 9	2.600	—	0.700
" 10	3.200	—	0.750
" 11	3.000	—	0.850
" 12	2.000	—	0.750
" 13	1.100	—	0.700
" 14	1.400	—	0.550
" 15	0	—	0.400
" 16	—	0.100	0.280
" 17	0.200	—	0.350
" 18	0	—	0.200
" 19	—	0.150	0.200
" 20	0.150	—	0.300
Sum of the increases	25.100	Decreases	8.880

From the above we see that the sum of all the increases is 25.100 kilograms, and that the sum of the decreases is 8.880 kilograms. After the ten days of honey-flow I continued the weighing during the six days as given above, when no honey was coming in, in order that no one could make the objection that it is impossible for the evaporation to take place in a day or two. I could have continued the series longer, but the result would have been the same. However, I can give the results for the benefit of the doubter. As before, the weights are in kilograms.

	Increase	Decrease
May	40.300	16.440
June	26.050	12.750
July	8.530	7.130
August	1.620	3.830
	76.300	40.150

If this weight as obtained from the first table had been composed entirely of nectar, yet to be ripened in the hive by evaporation, the decreases in the same time ought to have amounted to 20 kilograms. As a matter of fact, the decreases in this time were only 8.88, or, approximately, 9 kilograms. This shows that the theory of ripening in the hive is impossible. The result is still more striking when one considers that, included in the 9 kilograms, is the amount consumed by the bees and brood.

The experiments of Huillon, as given in the *Revue Eclectique* for 1906, are far more conclusive. At the time of a good honey-flow Huillon removed from three of his colonies all the combs containing honey, leaving only the brood-combs. Early in the following morning he gave the bees empty honey-combs. From the first of these colonies he took off the combs in the evening of the same day and extracted the fresh honey, which had the density of 1.394; that is, it contained 26 per cent of water. He took off the combs with the fresh honey of the second colony early the following morning, and found that the honey had a density of 1.413, corresponding to 22 per cent of water. The third colony had been placed during the evening of the first day in the cellar, and left there three days. He took the honey from this hive and found it completely ripened, having a density of 1.432, amounting to about 17 per cent of water.

These experiments are exceedingly instructive. They show us that the bees never unload nectar, but that the product which they do unload is already quite different, containing about one-half less water than the nectar in the first place. We see, further, that the ripening process in the hive needs only about three days.

The bee possesses in its head and breast a large number of secretory glands, consisting of cylindrical tubes, the cells of which take from the surrounding blood the necessary material for preparing the secretion. Each of these minute cells represents a chemical laboratory where there are prepared wonderful substances, including the ferment which inverts the cane sugar into fructose and levulose. Each of these glands discharges into a little channel, and those little channels run like hundreds of rivers into a greater channel whose caliber is $\frac{1}{\frac{1}{2}}$ of a millimeter, or $\frac{1}{\frac{1}{20.5}}$ of an inch, and which in turn discharges its liquid into the tongue. Whenever the bee is sucking nectar or honey a small drop of the secretion is mixed with it before it goes into the honey-sac. Those glands furnish to the honey three important substances: First, formic acid; second, the inverting ferment; third, the albumen. We see that the bee, which is sucking nectar, stores in its honey-sac a liquid of greater value than the simple nectar.

Now, a number of bee-keepers have observed that a bee coming home from the field during a good honey-flow throws out near the entrance a fine jet of water. This is something that every bee-keeper can observe if he places himself in the right manner near the hive on a beautiful day in May or June. This jet of liquid represents the 50 per cent of water which the nectar has lost by the time it is deposited in the cells. It must be the honey-sac, the minute membranes of which possess the ability to withdraw from the nectar a great deal of the water. That water goes into the blood room, and, in my opinion, the six glands in the rectum excrete this superfluous water during flight.

We know that the new honey is never placed where the bees intend to keep it permanently, but is scattered throughout the hive. It is transferred several times, and each time is enriched with formic acid and albumen, and still more of the water withdrawn. This relatively small quantity of water (only 8 per cent according to Huillon) can be easily excreted by the nurse bees by the aid of transpiration.

I contend that the ripening of the honey is not a matter of evaporation, but that it is made possible, in the first place, by the jet

*The kilogram is equal to 2⅕ lbs.

of water seen during the flight of the bee, and by the means of the transferring of the honey from place to place by the nurse bees.

Some may ask how I explain the great decreases during the honey-flow and the energetic fanning at the entrance by the bees during the whole night. I claim the nightly decreases (which, of course, exist also to some extent during the day) to be the result of the combustion of sugar and albumen in the little bodies of the young and old bees in the colony. Each egg, worm, larva, or bee is a little stove which needs to be fed with honey and albumen. The arising vapor, though invisible to the eye, is formed of water and carbonic acid, the loss of which causes the decreases noted.

In a good colony there are in the cells about 2000 larvæ, from 11 to 21 days old, during June. A larva which is making a cocoon weighs at least 155 milligrams, and after ten days only 115 milligrams, so that it has lost in this time 40 milligrams. I estimate the consumption or combustion of all the brood in a colony to be 100 grams. The rest is used by the adult bees, and is not at all the result of evaporation. After a very busy day the bees are obliged to work hard in caring for the brood, producing wax, building comb, transferring honey, polishing cells, and ventilating. This ventilation is necessary indeed, for otherwise the bees will soon be intoxicated by the carbonic acid, which is found in great quantity. By the consumption of a pound of honey there is produced 350 grams of water, of course in the form of vapor, and 275 liters of carbonic acid. Here we have the source of the water which we can observe in the morning on the alighting-board after a good day. Of course the air in the hive becomes damp on account of so much water being formed in consequence of the transpiration of the bees and brood. It can be seen that, in such a moist atmosphere, the evaporation on the surface of the honey can not be very much.

The following also proves my position: If I give a colony in an evening in September, where the decreases in 24 hours are from 30 to 50 grams, a kilogram of honey (without water), the decreases in the next 24 hours will be at least 300 grams where evaporation of water is out of the question.

I repeat: *The thickening of nectar into ripe honey is not a matter of evaporation, but results from the ability of the honey-sac of the bee to withdraw a part of the water. By the transferring of the honey in the hive it loses by degrees its superfluous water, and is, at the same time, inverted and enriched with formic acid and albumen.*

Ottenbach, Zurich.

[Many years ago our Mr. A. I. Root saw the bees discharge this watery spray in the midst of the honey-flow, just before they entered the hive. He gave it as his opinion, at the time, that this was surplus water that the bees had in some manner discharged from gathered nectar. Reports of his observations at the time were given in GLEANINGS, and subsequently in our A B C of Bee Culture. During later years, so far as we can remember, nothing had been stated about this matter, in our American journals at least, until Dr. Bruennich did so in this article.

Now that the question is opened up again, we should be glad to get reports from many sources, for we are now right in the midst of a honey-flow, and it will be a splendid opportunity to make observations.

Well do we remember the time when A. I. Root was learning his A B C's of bee culture, and how at the same time he was conducting some experiments in a greenhouse. He put several colonies in the house, along in the early '70's, for the purpose of getting the bees to rear brood in midwinter. He hoped that he might train them to fly out into the greenhouse and back into their hives. But in this he was only partially successful, for it will be remembered that many of the bees were killed by bumping against the glass. But he succeeded in getting some of the bees trained to return to the hives.

He put out some very thin syrup which they gathered, and then observed, as they were going back to their hives, how they discharged a thin spray of moisture. In order that he might determine whether this were sweet or not he put out a lot of dinner-plates. On these he caught the moisture, and after rubbing his finger over the wetted plates he applied it to his mouth, but found the exudation was simply water.

These observations of Dr. Brunnich bring up another interesting question—that thin sugar syrup, or, in fact, any sugar syrup fed to bees, will not be evaporated or ripened like the saccharine matter gathered from the nectaries of the flowers. It goes to prove, then, that the chemists are right in saying that "sugar honey" is not the same as floral honey; for necessarily it can not be given the same mode of treatment, and hence is lacking in some of the essential elements of a real honey.—ED.]

FOLLOWING THE DOOLITTLE NON-SWARMING PLAN WITHOUT MAKING INCREASE.

When using the Doolittle non-swarming plan, if one has no weak colonies, and wants no increase, will it answer to place the old brood-nest, after all queen-cells have been removed, over the two supers on the old stand with queen-excluder between supers and brood-nest?

MRS. T. A. BEACH.

Delaware, Ohio.

[This question was referred to Mr. Doolittle, who replies as follows.—ED.]

If you desire, cover the tops of the sections with enameled cloth, with the exception of one little place right over the entrance to the hive below, so the bees can go down and out at that place, thus keeping the tops of the sections clean. The upper hive is taken off at the end of 21 days, or after the brood has all emerged. In this way the hive of beeless brood can be cared for; but in this case, at least one frame of bees should be left without shaking, so that there will be enough bees to protect the brood.

But if you are at all like me, you will prefer to take frames of brood from some of your colonies a little less weak than your stronger ones, and give these to the stronger, so as to have all colonies that are shaken very strong; and the few not shaken, weak enough to receive the hives of beeless brood. In this way no increase will be necessary, while those to be shaken, or worked for comb honey, will give a greater yield.

Borodino, N. Y. G. M. DOOLITTLE.

CAPPING-MELTERS.

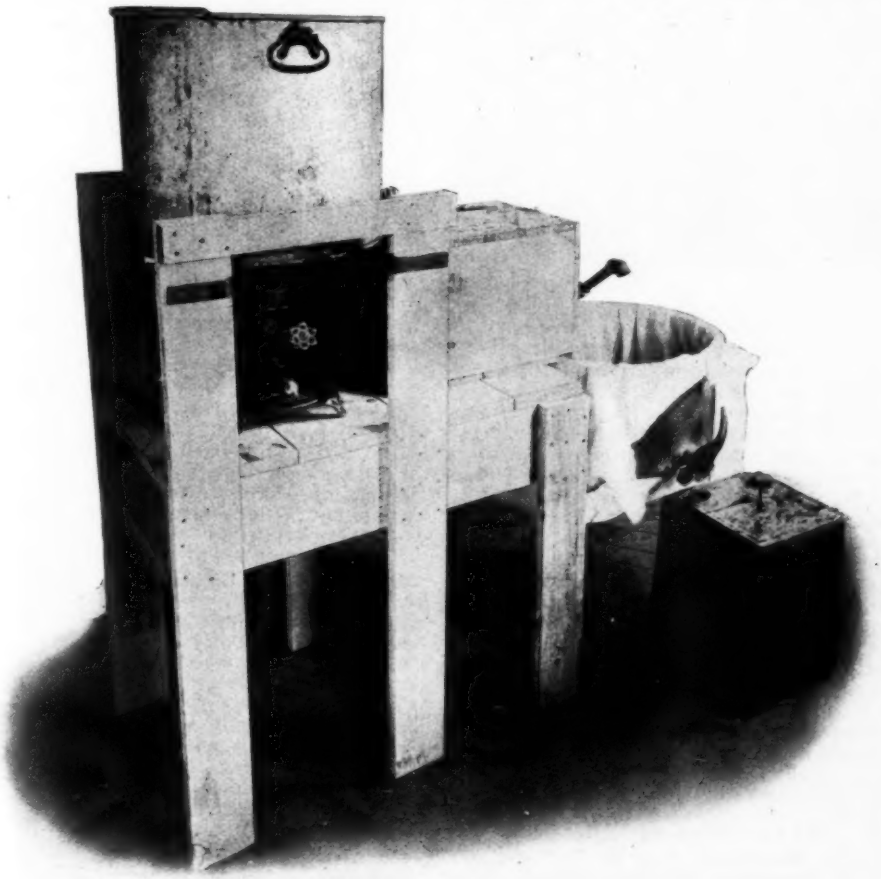
How to Separate the Melted Wax and Honey Successfully.

BY H. H. ROOT.

The time has come when the extracting-rooms of a large number of the prominent bee-keepers are equipped with capping-melters of some form or other. The universal interest in this method of disposing of the cappings shows how valuable and how practical the plan is. There are many different shapes and constructions of capping-melters in use; but it is not the purpose of this article to discuss the construction of capping-melters, but to consider separating the honey and wax that run from them.

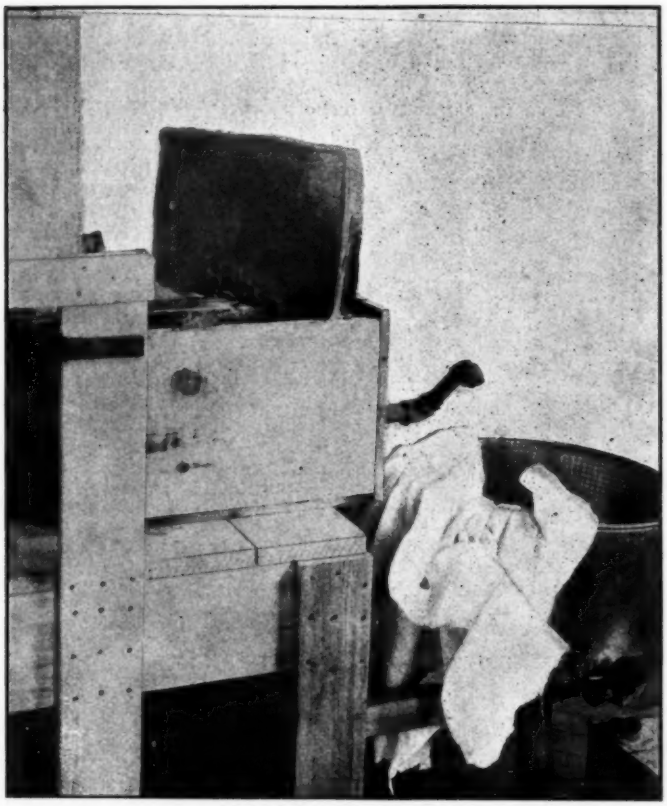
Some bee-keepers make no attempt at separating the two liquids, but simply run both of them into a pail or can; and when this can is full they set it aside and put an empty one in its place. This process is kept up until the work is finished, and by the next day the melted wax will have hardened so that it may be lifted from the honey in a solid cake, which cake needs only scraping on the bottom to be marketable. While this plan has its advantages, it requires quite a large number of cans, which, of course, take up considerable room, and necessitate much heavy lifting.

The Aikin honey and wax separator described in the Jan. 15th issue of GLEANINGS for 1902 was the first practical separator, we believe, to be shown; and the principle made use of in this separator is the one used by the majority of bee-keepers to-day for separating honey and wax. The wax is lighter than the honey, and floats on the top of it. A gate, therefore, at the bottom of a can containing melted wax and honey will draw off the honey only, while a gate at the top, or near the top, will draw off the wax. Practically the only difficulty that we have encountered with the Aikin separator is that the wax tends to chill unless there is a very large amount of wax and honey running into the can constantly, or unless the room where



CAPPING-MELTER, HONEY AND WAX SEPARATOR, AND HONEY-STRAINER.

The melted wax and honey run directly from the melter into the separator. The wax remains in the separator, and the honey flows on into the strainer, and from thence into the five-gallon can.



THE CAKE OF WAX LIFTED FROM THE SEPARATING-CAN.

the work is done is very hot. We have always been able to keep the contents of the separator from chilling, however, by wrapping old carpets or sacks around the whole can, with the exception of an opening near one corner to admit the stream of honey and wax from the melter.

In our experiments we have used, with a considerable degree of satisfaction, a separator made of a five-gallon square can with one side cut out, which open side then served as the top. Near the bottom of one end of the can a piece of pipe was soldered, which extended up four or five inches before turning down again, as per illustration. The principle involved here is the same as that used in the Aikin separator; that is, the honey, being heavier than the wax, settles to the bottom, so that honey only can pass out of the pipe. The wax rises to the top, where it is allowed to accumulate until it reaches the level of a trough near the top of the can, through which it overflows into a separate vessel.

We soon found that this plan worked perfectly so far as separating the wax and honey was concerned; but the relatively large amount of exposed surface caused too much chilling, and we therefore had to wrap the can with old sacks or carpets, as mentioned before. The inconvenience of having the old sacks and carpets around led us to inclose the separating-can in a wooden box made of half-inch stuff, and provided with a tight wooden cover of the same material, having an opening near one for a funnel to catch the stream of honey and wax from the melter. Since we adopted this wooden jacket around the can we have had absolutely no trouble. The wax does not chill, but keeps in a liquid condition all day long. During the noon hour, or during any other time when the work may be temporarily stopped, a slight layer of hard wax may accumulate on the surface; but when the work is resumed the stream of wax and honey coming in on top of it soon melts this, so that, at the end of the day, the whole mass is entirely liquid again.

It can be seen that this wooden jacket is on the principle of the "fireless cooker;" that is, the heat of the liquid is confined so that the wax can not chill. This plan, moreover, is much more convenient than the carpets and sacks, and the heat is also better confined.

On referring to the first illustration it will be seen that a Pettit honey-strainer is supported directly under the pipe leading from the separator. By this plan the honey strains as soon as it runs from the separator, so that it can be allowed to pass directly into a five-gallon can. Ordinarily, of course, a strainer would not be necessary under the separator, as the honey could be run into a large pail or can, and emptied directly into the regular strainer over the main honey-tank. We were rendering a large quantity of candied comb honey, and we arranged the strainer, etc., as shown, so that the whole process would be complete. This Pettit strainer is the best one for honey we ever tried. There is a very large amount of vertical straining surface, and, as mentioned by Mr. Pettit on p. 143, March 1, it is not necessary to stop the work when one cloth is clogged: it may simply be drawn to one side and another cloth put over it. In a short time the first cloth may be lifted out, comparatively free from honey, and washed, so that it may be used again. The cheese-cloth is held away from the side of the can by coarse-mesh wire screen, as shown in the second illustration, so that there is a ½-inch space between the cheese-cloth and the can all around, and

about ¼-inch space between the cloth and the bottom of the can.

The second illustration shows a cake of wax lifted out of the separating-can the next morning, practically free from refuse except a small amount on the under side, which may be scraped off. The wax is of very good color, almost equal to that coming from the solar extractor, since no injurious heat is applied to it. There is no danger of hurting the wax in the separating-can if no outside heat reaches it and the impurities have a chance to settle, since the wax keeps in a melted condition for so long a time.

If the capping-melter is to be used considerably it pays to have a stand somewhat similar to the one shown in the first illustration, so that the heating-stove can be slid under the melter or taken out again at any time. This takes the weight off the stove and makes it convenient in many ways. We use a kerosene-stove of the wickless blue-flame pattern, and find that it is very economical in the consumption of oil, and gives a great amount of heat; in fact, the flame is nearly as hot as that from a gasoline-burner, and it is, of course, much more economical. When the melter is full it is rather heavy, so a good strong support is needed. We use strap iron on edge, as shown, ¼ inch thick, and ¾ inch wide.

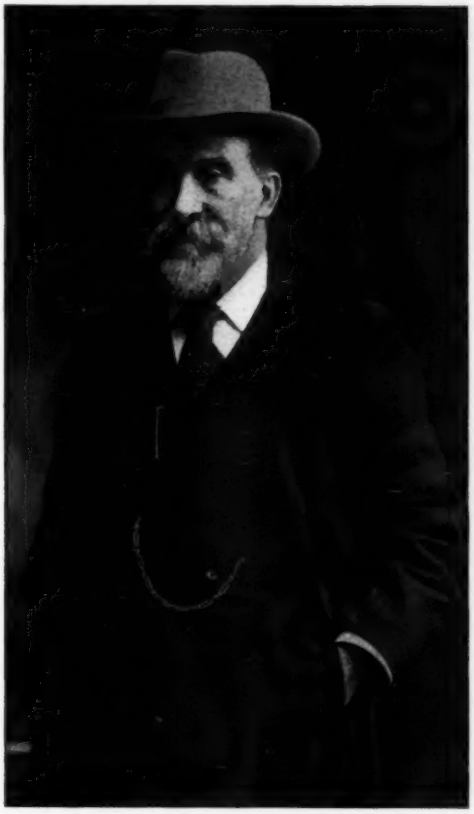
THE LATE W. BROUGHTON CARR.

His Life and Work.

BY THOS. WM. COWAN.

[A short time ago we published a brief announcement of the death of the late W. B. Carr, assistant editor of the *British Bee Journal*, and the inventor of the "W. B. C." hive and frame used so extensively in England. As Mr. Carr was one of the leading authorities on bees in England, one who has certainly left his impress on the industry, we wrote to Mr. Thos. Wm. Cowan, his associate on the *British Bee Journal*, for a more extended sketch. This he very kindly consented to give, and we take pleasure in presenting it herewith. Later on we will give illustrations of the "W. B. C." hive, with his special spacing-device as applied to the frame.—ED.]

Mr. W. Broughton Carr was born in February, 1836, and was, therefore, just 73 years of age when he died. He came of an old stock of grazing farmers and cattle-breeders in Yorkshire. He was apprenticed in 1851 to the trade of copper-plate engraving in Liverpool, and carried on the business in that city for 26 years before he came to London in 1890 to join the editorial staff of the *British Bee Journal*. In 1861 he married; and two years afterward, his business being of a sedentary nature, he resolved to live in the fresh air of the country, and took up his residence in Cheshire. Here at intervals, between business, he entered into rural pursuits. It was in 1866 that he first became interested in bees, through reading an article about them in *Chambers' Information for the People*, and became fascinated with the idea of becoming a bee-keeper himself. It is amusing to read the graphic description given by himself in the *Record* for December, 1889, of how he first became possessed of a swarm. He had never seen a swarm before that time, and took eight hours, with the help of a young Swede, who was supposed to know something about bees, to hive these bees into a straw skep. He thought surely there must be a more expeditious way of hiving a swarm, and therefore read all he could about bees in the works of Huber, Bevan, Woodbury, and Langstroth, with the result that ultimately he became a successful bee-keeper. He then moved further into the country on account of the bees, and settled at Higher Bebington, where he kept from twenty to forty stocks of bees. He tried various hives with both shallow and deep frames, finally adopting, in 1887, the one that now goes by the name of the "W. B. C." hive, and which is more generally used in this country than any other. The hive takes the standard frame of which Mr. Carr was a strenuous advocate from the very first. His district being good for extracted honey he worked principally for that, and advocated shallow-frame supers for the purpose, six inches deep, in preference to the standard frames used at that time. He also introduced the use of the eke to the frame hive, which, placed below the hive during winter, gave the bees a three-inch space under the frames. This eke put under a shallow super is just right to make



THE LATE W. BROUGHTON CARR.

the latter into a hive for standard frames, if one is needed temporarily. In addition to this Mr. Carr made an improvement in the metal end which he brought out in 1887 (see *British Bee Journal*, 1887, page 57), and which has gradually superseded every other, so that now all hives are fitted with frames having the "W. B. C." metal ends.

Mr. Carr was a very successful honey-producer; and prior to his connection with the *British Bee Journal* he was a frequent exhibitor, always taking prizes. He was one of the original founders of the Lancashire and Cheshire Bee-keepers' Association, and at the Indian and Colonial exhibition held in London in 1882 he superintended the exhibits of that association, contributing by far the largest part of the honey from his own apiary, for which first prize was awarded. As a practical manipulator there were few his equals, and he went about his work in a quiet unobtrusive manner; and it was always a treat to hear his counsels to beginners or candidates he was examining. He had gone through a bad attack of foul brood, which he cured, and managed, after that, to keep his bees healthy and prosperous.

Mr. Carr was a writer for many years before he became connected with the *British Bee Journal* in 1890. He contributed to the *Journal of Horticulture* even before the *British Bee Journal* was established in 1873, and took an active part in connection with the literary work of the *Bee-keepers' Record*, which subsequently came under his sole charge—from the time it was started in 1882. It was in 1889 that his uprightness and high moral character induced me to single him out, and make him an offer to associate him with me in editing the *British Bee Journal*. Mr. Carr willingly accepted this offer, as, with advancing years, he was thinking of giving up his engraving business; and to devote all his time to bees was just what he thought would best suit him. The *British Bee Journal* was already at that time a weekly paper, and there was also the *Bee-keepers' Adviser*, a monthly, published at the *British Bee Journal* office. This was amalgamated with the *Record*, which was placed under Mr. Carr's direction. He carried out to the last his trust with notable ability, and his evenness of temper and sound practical knowledge were seen alike in his own articles and in his replies to inquiries. He was associated with me for 19 years, and during the whole of that time our intercourse was of the pleasantest; and I felt that, during my frequent visits abroad, I could safely trust my interests, as well as those of bee-keepers, in his hands. He was on the Council of the British Bee-keepers' Association since 1890, and was a regular attendant at their monthly meetings; and, owing to his experience, he was in frequent request as a judge and examiner in different parts of the country, and was thus a familiar figure at all our principal shows. When my advice was sought respecting the re-writing of the article on the "Bee" for the new edition of the "Encyclopædia Britannica" it was with much pleasure that I selected Mr. Carr for the work, which he carried out in an efficient manner.

For years the *British Bee Journal* offices have been the rendez-vous of bee-keepers from all parts of the world, and no one has ever been sent away without receiving the best advice and counsel that Mr. Carr could impart. There were few men in England who knew more about bees, and his loss is one that is universally felt. Mr. Carr had always hoped that he might die in the harness, and his hope was realized, for he was ill but a few days before he was called to his rest. Truly it may be said, "The end of this man was peace." He is no longer with us, but his works remain, and his influence will be felt for a long time. It has been quite touching to receive the number of letters sent from all parts, showing the wide sympathy felt for the loss which we have all sustained.

A SIMPLE UNCAPPING-MACHINE.

Knives that will Take a Thin Slice from New Empty Combs without Mutilating the Cells.

BY L. R. FERGUSON.

During my experimenting with uncapping-machines I have made and tried four entirely new and different machines, the last one of which I think can fairly be considered a success.

In my experimental work I have had in view the development of a machine having the following desirable features:

Simplicity of construction and operation, and cheapness of production.

Light weight and compact design to facilitate moving for use at out-apiaries.

The entire absence of moving parts such as cranks, cog-wheels, belts, treadles, ropes, moving knives, or revolving cylinders.

Simple and rapid adjustment for changing from one style or size of frame to another.

The absence of any necessity for the use of heat or outside mechanical power, such as steam or electricity.

A knife which would successfully work with any kind or condition of honey, and level off to a uniform surface all comb, whether capped or not.

The entire separation of the detached cappings from the uncapped comb.

The easy introduction and withdrawal of the comb in such a way that neither comb nor hands need come in contact with the honey and cappings dropping from the knives; and, above all else, rapidity and ease of operation.

Fig. 1 shows a full-depth Langstroth frame introduced far enough to uncap about two inches at one end, and furnishes a good comparison from which to form an idea of the size of the machine.

In operating the machine the bottom-bar of the frame is placed between the flaring sides of the first set of bottom-guides, the frame brought to an upright position, and

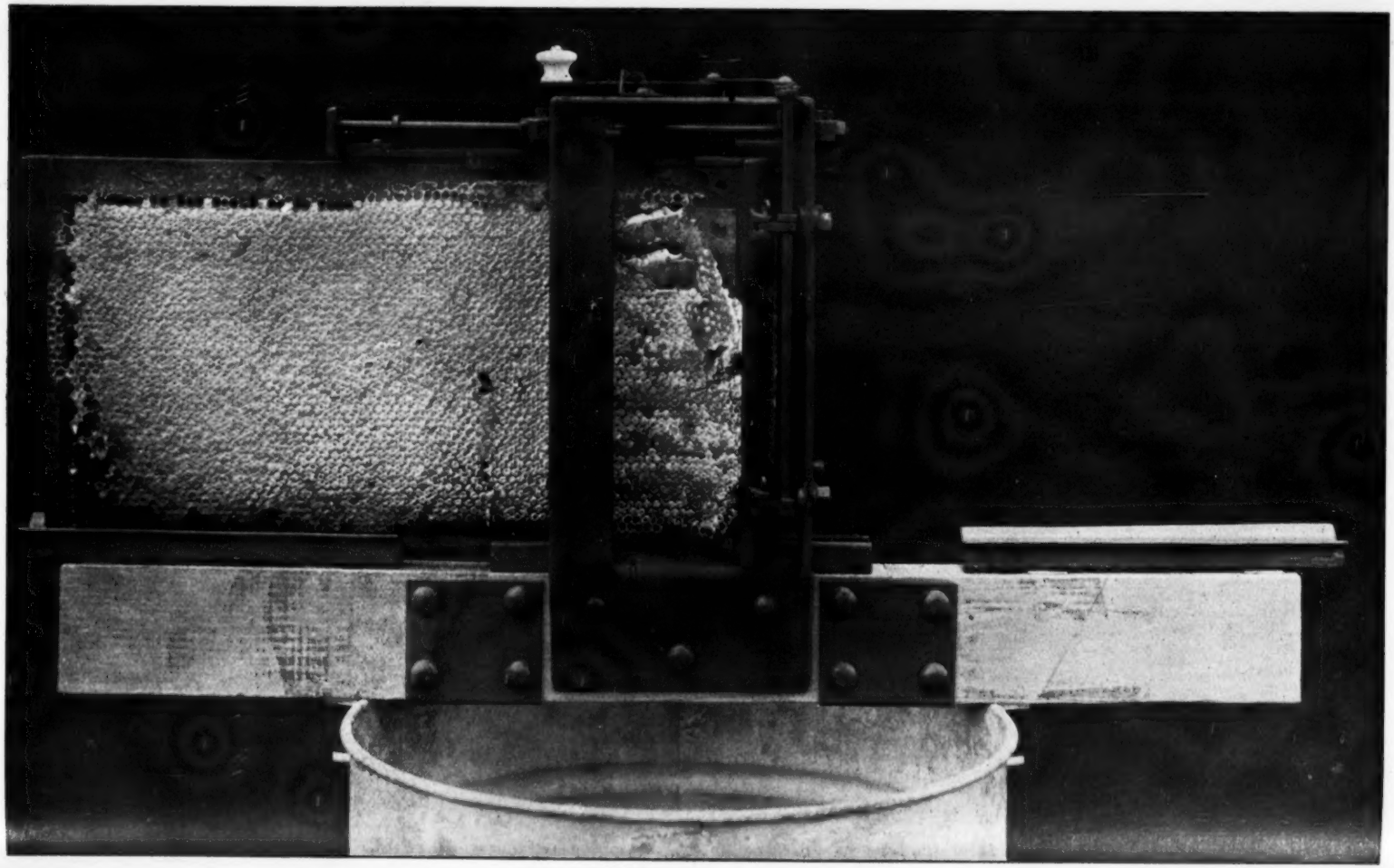


FIG. 1.—FERGUSON'S UNCAPPING-MACHINE.

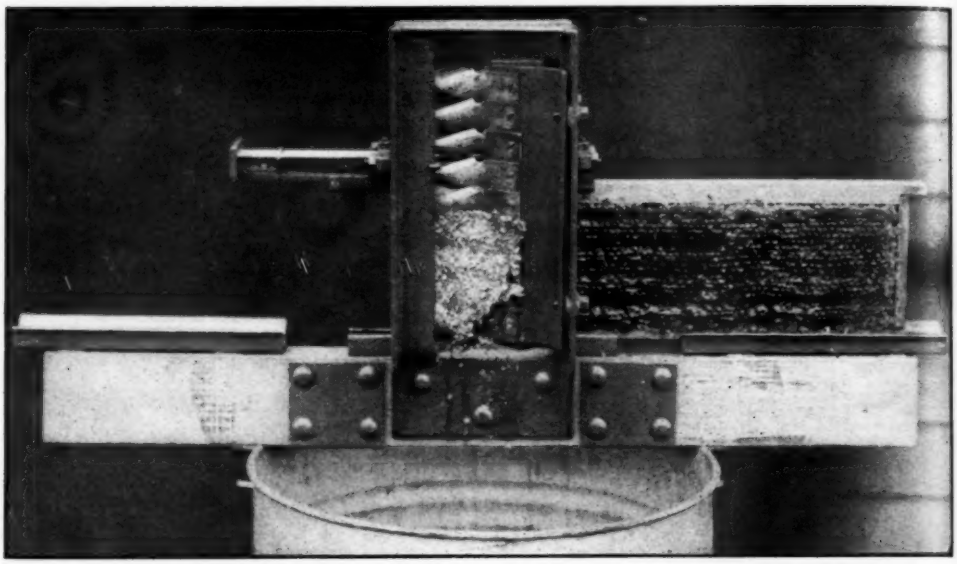


FIG. 2.—THE ADJUSTMENT CHANGED SO AS TO TAKE SHALLOWER FRAMES.

pushed into the machine by the hand pressing on the end-bar until it is flush with the front uprights of the machine as shown in Fig. 2, when a dog, or catch, drops behind the end of the top-bar, and a push on the thrust-bar which forms part of the top-guide will force the frame past the knives and finish the cut, when the frame may be withdrawn, a spring returning the thrust-bar to its place.

Fig. 1 also shows a special feature of the machine which allows the use of a frame with the top-bar wider than the end-bars, or one having spacing-devices on the top-bar, the removal of the knives opposite the top-bar giving a passage for these, while the knives below will uncap down close to the end-bars; in the view shown, the frame is spaced by staples driven near each end of the top-bar, one of which is shown in position to enter the notch in the knife-bar; any pair of the knives may be removed to suit the height of frame used.

Fig. 1 shows the machine equipped with a special quick adjustment device for changing the depth of cut. For instance, if the machine is set to cut the comb down to one inch in thickness, and the operator gets hold of a thick heavy comb, and for any reason wishes to leave it as thick as possible, a slight movement of the lever or slide at the top of the machine will throw the knives out so as to cut to a thickness of two inches, or any intermediate thickness; this feature was designed after I had been strongly advised by experienced men that such a feature would be of much use, one very extensive producer in particular saying that he made an effort to have as little honey as possible taken off with the cappings.

For my own use I much prefer the simpler and stronger form of fastening, shown in Fig. 2, in which the knife-bars are brought to the desired position and clamped fast by two cap-screws, when every comb which passed through would be cut down to the same thickness, and be in better shape for future use.

Fig. 2 also shows the top guide lowered for use with shallow extracting-frames.

Fig. 3 shows the knife-bars removed, which gives easy access to all parts for cleaning; and as each knife is fastened with a single screw, all are easily removed for sharpening; but as the work is done with a sliding or drawing cut I do not think there will be the necessity for the extremely sharp edge required on the hand knife.

With the wooden base-bar made in three pieces, and connected by plates as shown, the outer sections may be removed, when the whole machine may be packed in a box 6×13½×14¾, inside measurement; and as the weight of the machine is only 24 pounds it can be very easily transported; or, if used in connection with one of the new capping-melters, it could be simply inverted and hung inside the melter while being moved.

Almost any plain frame in common use may be used with the machine, as all guides are adjustable; but as the bottom-bar has to support the weight of the comb while being uncapped, a stronger bottom-bar than many of those in use would be desirable; or better still would be the building of all combs down to the bottom-bar, and this, in connection with wide spacing, would produce a set of combs which would be easily and quickly uncapped.

I am very confident that this form of knife will work in any kind or condition of honey, as the slim sharp points are introduced un-

der the capping in such a way that the edge makes a drawing or sliding cut, and the cappings under which the knives are passing are held in place and carried forward by the uncut portion between the knives until the extreme rear points of the cutting edges are reached, when they drop away and can not again come in contact with the comb.

The extreme angle at which the cutting is done prevents the edges of the knives becoming clogged; and any loose particles of wax are carried through the small opening between the knives into the large oval opening, where they work themselves clear, thus preventing any clogging at this point, and yet the rear points of the cutting edges overlap the same path in such a way that a complete severance of the cappings is assured, besides providing an excess of metal for grinding away in sharpening, thus prolonging the use of the knife.

The knives are made slightly concave on their inside faces to prevent suction and friction, besides adding strength and rigidity to the blade.

As a test of the work they would do in some of the thick heavy honey which gives so much trouble in hand uncapping, I kept some frames of well-ripened clover honey for several hours in the refrigerator, then uncapped them without any difficulty whatever. The only difference I could see was that the cappings broke up into smaller pieces than those from the warmer combs; and it was necessary to let them warm up before they could be extracted.

The combs used in testing the machine which I made last winter, and the ones from which these photos were taken, were saved over from last summer and fall; and while some of them had from one-fourth to one-half the honey candied, I had no trouble in uncapping them, so I think I am safe in claiming that the machine will uncap any honey which can be extracted.

This is the only form of knife which I tried that would work well on striking a patch of uncapped comb. Two different machines with one straight knife on each side would work perfectly on combs which were all capped, but upon striking a patch of uncapped comb, the knives would clog and tear the comb; and, while they were of a simpler construction than this machine, I had to discard them on that account.

I had some combs built out, but not capped over last fall, which were extracted as dry as possible, and stored away without being cleaned up by the bees; and in testing the machine this spring I ran these combs with this small quantity of

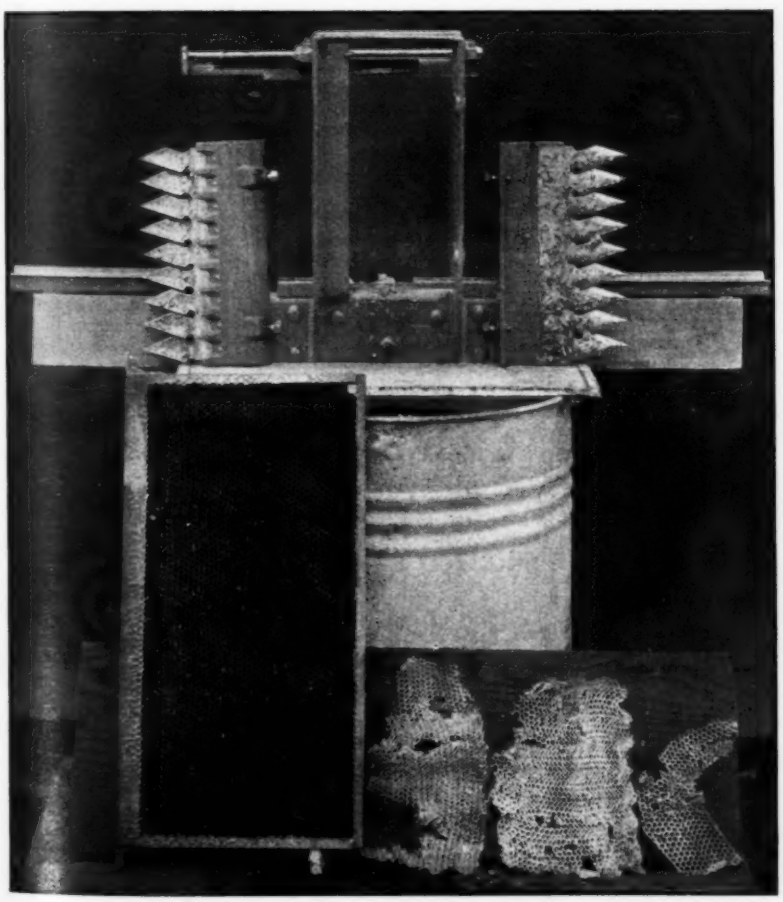


FIG. 3.—THE KNIVES REMOVED.

In the lower part of this view, thin slices are shown, cut from new empty comb without mutilating the cells.

thick gummy honey on them through the machine, with the result shown in Fig. 3, which shows one of them with about four-fifths of the surface shaved off, the remainder not being built out far enough for the knives to catch.

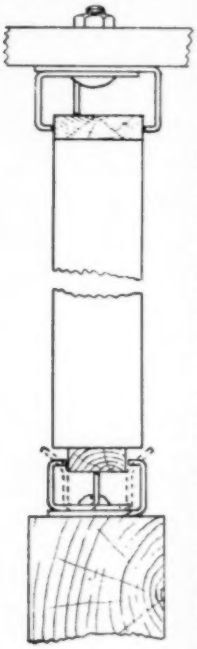


FIG. 4.

Some of the thin net-like sheets of comb sliced off from these combs are also shown; and, considering the trouble I have had with this feature of the work, the gummy condition of the comb, and the fact that these combs were all new tender combs, I consider this extremely good work.

Fig. 4 shows in outline the system of guides, the broken lines showing the auxillary guides which receive and line up the frame before entering the machine, and support it after leaving the knives, the full lines showing the guides as they engage the frame while passing through the machine; these guides are all made from sheet metal, and of such shape that they come in contact with the frame at extremely narrow points only, and will easily cut their way through any burr-combs or patches of propolis.

As to the speed at which the work can be done, I easily uncapped at the rate of six frames per minute with my last-year's machine, taking the frames from one super, and returning them to another; and as the guides have been improved, this rate of speed can be improved upon, and any common laborer can do the work.

While not entirely satisfied with some features of the machine, I have taken steps to secure patents covering the invention, and have made arrangements with extensive honey-producers in different parts of the country to give the machines a thorough trial under varying conditions; but until they have had a more exhaustive trial than at present, there will be none for sale.

Harvey, Ill.

[A year or so ago Mr. G. W. York, editor of the *American Bee Journal*, wrote us, telling us that a bee-keeper near Chicago had gotten up an uncapping-machine that he thought we ought to see; that he himself believed it was a good thing, as he had seen it in operation. He hoped we might attend the meeting of the Chicago convention and see the machine; but some business engagements prevented our leaving, and we knew nothing of the details of the invention until this set of photos, with the article, was furnished us.

When we first looked over the pictures we supposed that, of course, they represented the machine gotten up by Mr. Samuel Simmins, of Sussex, England, who had been working on almost exactly the same idea for some time back, and who had promised to send a set of photos showing the machine in operation; but, lo and behold! this was not the Simmins uncapper but the Ferguson machine referred to by Mr. York.

We were struck at once by the remarkable similarity of the two machines. The principle is identically the same, and the only difference is in detail—just enough to show that the two men were working independently of each other, neither knowing what the other was doing.

Mr. Ferguson has already applied for a patent, and so has Mr. Simmins. We also understand that Mr. A. C. Miller, of Providence, R. I., has made an application for something similar. As to who shall be able to establish prior rights in the invention will probably be determined soon by the Patent Office. Mr. Simmins communicated his invention to us some three years ago, but at that time was not ready to have its details of construction made public. It has since been shown with illustrations in the *Irish Bee Journal*.

Apparently the principle is a success. Mr. Simmins has been very confident that his triangular knives would revolutionize uncapping throughout the world. Mr. Ferguson, working on the same idea, has been equally confident; and the set of illustrations herewith furnished would indicate that the machine will do all he claims for it. It is now a matter of working out the details and determining who is the original discoverer of the basic principles, when the invention will doubtless be put on the market.

Both inventors use triangular V-shaped stationary knives with beveled edges mounted in an up-right frame through which the comb is pushed. While Mr. Ferguson uses knives having concave backs, all of the *same size*, Mr. Simmins uses the same kind of knife, but large and small ones in alternation.

It is remarkable that these two men should be working so closely on the same ideas; yet from careful investigation of all the facts, we are thoroughly convinced that neither borrowed from the other. Mr. Ferguson's patent is well along in the Patent Office, and so far he has not encountered any thing that would indicate an "interference." If the machine is a success (as we believe it is) we hope the question of ownership of the patents can be clearly established, so the public can enjoy the use of the invention without being enjoined by some other claimant.

Apparently this Simmins or Ferguson invention has the advantage over other uncapping-machines in that it dispenses with all moving parts of any sort. Furthermore, it can be built for a comparatively small sum of money. While it may not be able to uncap low spots in a few combs, this would be no

very great disadvantage, because an ordinary uncapping-knife could always be at hand to take out these spots not touched by the machine.

The most serious objection to this uncapper is the fact that it would be impracticable to use it on frames having self-spacing end-bars or end-bars wider than the general surface of the comb. Among the newer bee-keepers of the country, Hoffmann frames are used almost universally. The Ferguson machine as here shown could not handle such frames, and we do not see how it is posto modify it so that it could, *unless* the combs were made to pass through the knives the other way to—that is, with the top and bottom bar on a vertical line. We do not see any reason why it may not be just as practicable to uncap combs through the narrow way of the comb as the wide one. It would make the machine somewhat more expensive, owing to the use of more cutting-knives. In this connection it is proper to remark that Mr. Simmins says he can handle Hoffmann frames in his machine.—ED.]

PRACTICAL INSTRUCTIONS FOR BEGINNERS.

How to Take Care of Swarms; Some Timely Hints on Management During the Opening of the Surplus-honey Season.

BY E. D. TOWNSEND.

It is time to put on the supers (the parts of the hive that contain the surplus honey) by the time the first clover bloom is seen. Five days later, on opening the hives we may find that the bees have done nothing in the sections, and we wonder whether they will ever start. In three more days we possibly find that they have still done no work in the sections, so a super is lifted off and a comb of brood lifted out. If we do this we perhaps find that the bees are beginning to draw out the cells near the brood, and that they are placing new honey in these elongated cells. A beginner, on seeing these, might think that the bees were going to fill the brood-combs before working in the sections; but in two more days we shall probably find that they have begun storing in the bait-section. This bait-section is one carried over from the previous season, placed in the center of the super to get the bees to work in the sections. The new sections look nice and clean beside this old dirty one; and no one would think of using such an old piece of comb were it not for the fact that the bees without such bait are too slow to enter the supers.

It is several years since I used bait-sections in my comb-honey supers. Instead of these I use an extracting-comb in place of each outside row of sections. These extracting-combs are much superior to the bait-sections, for there is not usually enough of these left-over sections to provide as much of a bait as these two extracting-combs supply. The main reason for putting extracting-combs at the outside is to start the bees working on that part of the super that is usually finished last; namely, the outsides and the corners. In this way the whole super is finished nearly at once, and the experienced bee-keeper knows that this means comb honey of superior quality. The editor says there is a growing demand for comb-honey supers equipped with some extracting-combs, and I have never known of a case where this plan was tried and abandoned. It prevents much of the swarming so prevalent in comb-honey production, and this means, of course, much more surplus honey. I have managed a yard of about one hundred colonies for the last two years, and by following this plan I have had less than twenty per cent of swarms.

The second reason for placing extracting-combs, which are to act as the bait-combs, at the sides of the super is that the queen rarely goes to the outside combs to lay eggs; and this means that these extracting-combs can be kept white and clean so they will not darken the cappings of the sections next to them. I use separators between all of the sections, and also between the extracting-combs and the sections nearest them.

HANDLING SWARMS.

The beginner is likely to have so many swarms, due to the usual method of working for comb honey and to his inexperience, that but little surplus honey will be secured. Generally speaking, the more swarms there are, the smaller the surplus-honey crop will be.

The first step in preventing swarms is to put the supers on a week or so before the honey-flow opens, as mentioned before—not because the bees actually need the extra room, but to keep them from becoming crowded so that they get the swarming fever.

The next step is to give more super room before the first supers are full. An empty super ought to be given when the first one is not more than half full. This second super can be set on top, or the first one may be lifted up and the empty one placed next the hive. We set the empty supers on top of the ones given at first; and when the bees get nicely at work in them we change places and put the second super under the first one. This means a little more work, but, in return, rather better-filled sections are secured.

The beginner is usually anxious to have all the natural swarms possible in order to increase the size of his apiary. A neighbor of mine, who was too busy a farmer to take care of bees, once had a dozen colonies at the beginning of the season, and before he knew what was happening a swarm issued from first one colony and then another. The result was that his bees swarmed so much that practically no surplus honey was secured. He hived every swarm, good or bad; and, since the season was only an ordinary one, some of the later swarms starved before the next spring. Finally, when the honey-flow began the following year there were only about as many colonies as there were the year before, and the amount of

honey secured was very small besides. It is better to make haste slowly, when increasing an apiary; for a live colony in the spring is worth many dead ones.

The plan that I shall here outline will enable the beginner to get a fair crop of surplus honey in connection with a pretty good increase besides. After the clover honey has been coming in for a few days, some of the colonies will cast swarms. No after-swarms should be tolerated, so when the prime swarm (that is, the first swarm) is in the air, the hive which it came from should be carried to a new location at least 30 feet from the old stand. However, if it is desirable to set this old hive near where it stood before, it should be carried away just the same, and then, at night, after the new swarm is hived, the old hive can be moved near this new swarm if desired. If this old hive had been placed only a few feet from where it formerly stood, many of the bees would have found it and would have gone back to it again, strengthening the parent colony enough, possibly, to cause an after-swarm. It is desirable to have all the flying bees with the new swarm, for it will do practically all the work for the next few weeks, there being no working force left in the old hive.

As soon as the swarm in the air begins to cluster, a new hive should be set on the old stand, and the sections from the old hive put on it whether they are partly filled or not. It is not necessary to wait until all of the bees have clustered before getting them and shaking them in front of the new hive; for, even if a few are left, they would have no place to go to but back to the old location, on which, in this case, the new hive stands. Now, if the supers are given at the proper time, etc., the bees of this swarm should not swarm again during the honey-flow.

HOW TO GET SWARMS THAT ARE CLUSTERED IN INACCESSIBLE PLACES.

If a swarm clusters on a small limb of a tree where it can be shaken into a Manum swarm-catcher and carried to the hive, almost any one, even without experience, can get along very well; but if it clusters on the trunk of a tree, on a fence-post, or on the ground, it is rather difficult for one to get it who does not know how. We will suppose that the cluster has formed on a fence-post. Set the Manum swarm-catcher near the post (a couple of feet higher is all the better), and then with a long-handled tin dipper dip most of the bees from the post, and empty them into the swarm-catcher. Now smoke the rest of the bees off the post and they will soon alight on the basket. In this way the whole swarm can be carried to the hive and run in.

HOW TO GET A SWARM INTO A HIVE.

The whole cluster of bees in the swarm-catcher should not be dumped in front of the hive at once, for a large number of them will take wing. About a quart of bees should be dislodged from the catcher and shaken near the entrance of the hive; and when these bees set up that "homing hum" every bee in the catcher will hear it, so that, when they are dumped in front of the hive, instead of many of them taking wing, some of them, perhaps, going back to the original clustering-place, all will stay on the alighting-board, and every thing will be quiet. It is quite important to have the bees enter the hive as soon and as quietly as possible; for if another swarm should issue soon after the first one is hived, the bees of this second swarm would be attracted to the first, and would be likely to enter with the rest.

It often happens that another swarm issues about the time that the first one is nicely clustered on the swarm-catcher; and in this case, if the first swarm be hived immediately, the bees of the swarm in the air would unite with it, so that there would be the two swarms in one hive. While this would do no serious harm, I usually prefer to have each swarm hived by itself; for by so doing about as much honey is secured, and I have the extra colony besides. In such a case, therefore, the proper way would be to carry the first swarm, already on the swarm-catcher, into a cellar, or set it aside in the shade, with a sheet over it, so the bees of the swarm in the air will not find it. While this is being done it is quite likely that the other swarm will cluster in the place just vacated by the first swarm. It may then be shaken into a second swarm-catcher and hived in the usual way; and when every thing in the yard is quiet the first swarm left covered with a sheet can be hived as usual.

WHAT TO DO WHEN MORE THAN ONE SWARM COMES OUT AT A TIME.

It sometimes happens that two or more swarms emerge at about the same time, and there is no way of keeping them from going together. This is a more serious matter, and the beginner will hardly know which way to turn. He will very likely get all the bees into one hive, as this is apparently the easiest way out of the difficulty. We will suppose that two swarms have issued and clustered together. The hives containing the parent colonies should be removed just as in the case of a single swarm, and empty hives put on the old stands. Partly filled supers from the old hives should be put on the new hives, and entrance-guards fastened over the entrances. It is best to do this at once, for the bees of the newly hived swarm should not be disturbed for three or four days, or else they may decide that their new quarters are not just right, and that they had better leave. When nearly all the bees of the two swarms have clustered, about half of them should be shaken into the swarm-catcher and taken to one of the new hives. A queen-cage should be provided, for one of the queens will have to be found and caged temporarily. Before shaking, a wide board should be leaned up against the front of the hive for an alighting-board. As before, a few of the bees should now be emptied on this board; and, since there is a queen-excluding guard over the entrance, only the workers can get in. As soon as the few bees set up the "call" the rest should be dumped

on the board, a little further from the hive than before, in order to give more of a chance for finding the queens as they run up. When this first lot of bees is run in, whether the queen is found or not, the other portion of the swarm should be secured and dumped in front of the other hive similarly arranged. During this process, usually both queens are found, and I have never failed to find at least one of them. If both are found, one is run into each hive, and then the amount of bees equalized (if not already so), and every thing will be well. If only one queen is found, she should be caged and kept in the shade where nothing can harm her, and the entrance-guards removed. In fifteen or twenty minutes the bees of the queenless colony will make a demonstration, and, if left long enough without their queen, will come out and mix with bees of the adjoining hives. Before this can take place the caged queen should be allowed to run in as soon as possible. A welcome hum will greet her as she enters.

The clipped-queen plan for handling swarms is too complicated for a beginner, no matter how good it looks on paper.

Remus, Mich.

CARPENTRY FOR BEE-KEEPERS.

Use of the Hammer.

BY F. DUNDAS TODD.

One of my school-fellows started out in life in a machine-shop, his ambition being to become a locomotive engineer; but, as Burns says:

> The best-laid schemes o' mice an' men
> Gang aft a-gley.

Tom wound up by becoming a famous teetotal lecturer. Let it be understood I am not blaming him in any way; for, if the truth were only known, my own vagaries have been even worse. I started out on a farm

> To learn to sow, to reap and mow,
> And be a farmer's boy.

After several lapses of various kinds I became an editor, and now I have a presentment that I may wind up my inglorious career as a bee-keeper. As a youngster I envied the lucky men whose biography showed that they had had all kinds of experiences, and here at 50 I look back and wonder if anybody has had as much fun and variety as I have had.

But to return to Tom. I once asked another school-fellow why Tom could not learn engineering. "Because as a boy he could never drive a nail straight," was the startling reply.

The more I study human beings the more I see in the above answer. We are not all built alike, thank goodness; but, alas! we try in the days of infancy to make human beings duplicates of each other. Let us all be thankful that there are some Toms that can not drive nails straight but are adept in other lines.

But I have noticed that even those who have natural mechanical ability have an extraordinary knack at the start of gripping a hammer the wrong way; so in this article I am going to talk a little about how to drive a nail.

Hammers are made in weights ranging from a fraction of an ounce to as high as 30 lbs. The veriest child knows it would be absurd to attempt to drive a tack with one of the heavy weights; but not many realize that for each job of nail-driving there is one particlar weight of hammer that is best fitted for it. For instance, drive a fairly thin wire nail into medium hard wood with a 16-ounce hammer, then with the same tool try driving a cement-coated nail of the same thickness alongside of the first. The result will probably startle you, as the cement-coated nail will lie right down and refuse to be driven. Try a lighter hammer, and you will have more success, or grip the first hammer close to the head so that you can tap the nail rather gently.

You see when you hit a nail on the head you impart to it a considerable amount of force moving in a certain direction. This force carries the nail along until the friction in the wood neutralizes it. But in the case of the cement-coated nail the friction is so great that the nail can not move quick enough, and so the head lies right over, and we say the nail is bent. You see the same thing when you hit the wooden handle of a chisel with an iron hammer. The force is transferred instantly from the iron to the wood; and since the chisel can not move forward instantly, the wooden handle is mashed into a mushroom head. Now, if you used a wooden mallet to drive with, when the blow is struck its fibers would yield for a brief instant; and before they recoiled the handle of the chisel would be on the move, and the additional force would be gradually imparted, and thus avoid mashing the chisel handle. Moral: Do not use an iron hammer on a wooden handle unless the latter is protected with a layer of leather to absorb the force of the blow by compression of its fibers.

Now do you see that it is worth while to learn something about how to handle a hammer?

The bench wood-worker usually employs a claw hammer weighing fourteen to sixteen ounces. The head should be wholly of steel. The striking face is slightly convex (that is, rounded) to prevent marring the wood, and hardened so as not to be injured by repeated blows upon the nail.

The beginner usually grasps the handle with the third, fourth, and fifth fingers of the hand, and stretches the fore finger and thumb along the shaft. This may do for tapping gently, but it is utterly impossible to strike a heavy blow with such a grip.

The proper grip is that made by putting the thumb and fore finger around the handle, grasping it very firmly. The three remaining fingers are also placed around the handle, but grasp it very loosely. Now, if the hand is grasping the handle at a

point where the hammer balances well, a quick extension of these three fingers, with a slight straightening of the fore finger, will throw the hammer-head perpendicularly in the air. A light stroke may be delivered by allowing it to fall of its own weight, assisted very slightly by the contraction of the three fingers. In delivering a light blow the idea is to use the weight of the hammer, not the pull of the muscles. It is worth while to practice this blow for some little time, because this finger action is characteristic of all kinds of blows.

To strike a slightly harder blow, use the same finger action; but as the head descends, assist with a more powerful pull of the three fingers, but keep the wrist as still as possible.

A stronger blow will be delivered if we add a wrist motion that will permit the head of the hammer being thrown further back—in fact, to an almost horizontal position. Please note that the increased power is got by longer travel of the hammer-head.

For a very heavy blow, in addition to these movements we must bring in play the whole arm, so that the hammer-head may travel quite a distance to secure all the impetus possible, aided by the force of fingers, wrist, forearm, and shoulder.

When the face of the hammer meets the head of the nail, the face should be parallel with the surface of the wood. It is well to practice delivering blows until one can give the proper stroke with certainty. To get a record, set a block of wood on the bench and strike it two or three light blows and examine the impressions. Each should show a whole circle; but if only a portion of a circle appears, the hammer has not been held correctly. I suspect here is where we find why my friend Tom could not drive a nail straight.

Once you can strike light blows correctly, try harder ones, always stopping to examine the results.

The claw is very useful for withdrawing or pulling out nails. It is V-shaped on the inside, so as to take a powerful hold of the nail. To prevent the head of the hammer marking the wood it is advisable to place a block of wood under the hammer head, and not allow the hard metal to come in contact with the work. The block has the additional advantage of increasing leverage, and in the case of a long nail it is wise to change to a thicker block when the nail is partly out.

Victoria, B. C.

THE RIPENING OF BUCKWHEAT.

Some Further Questions Answered.

BY H. B. HARRINGTON.

Mr. H. B. Harrington:—I have been reading your article on buckwheat, p. 248, April 15th GLEANINGS. How much do you sow per acre, and what is the best way to put it in? I do not know of any one around here who raises buckwheat. I desire to put in some for my bees, and see how it will do here.

Red Cloud, Neb., May 17. T. F. CHILD.

Mr. Harrington:—On p. 246 you speak of one crop of buckwheat which was on the ground only 51 days. I do not understand this, for here everybody thinks it must lie on the ground after cutting until it cures, which takes a long time, for we cut it when the grain is about a third colored or ripe, and, of course, the stalks are green. It has usually taken me nearer 100 days to clear the ground after sowing. Perhaps I should use more fertilizer. Please tell how much fertilizer and seed you use per acre. How long do you let it lie after cutting, and when do you cut — that is, how ripe do you let it get? Here our thrashing-machines can not handle it very well unless it is quite dry. S. W. CRESSY.

Corinth, Me., May 29.

[To the above Mr. Harrington replies as follows:]

This is a big country, and GLEANINGS is read in all sections of it. Rules for raising buckwheat successfully in Maine would result in failure in Nebraska. To even things up and make a success in both States, we would suggest that Mr. Cressy ship to Mr. Child ten or fifteen days of Maine weather with the long twilights, the dewy October nights, and the Newfoundland fogs. That would insure the Nebraska man at least 50 bushels of fine buckwheat per acre, and in return let Bro. Child ship the Maine man three days of Nebraska weather with the hot blistering winds, and it will dry out his buckwheat better than any he ever saw before.

On page 347, June 1, we answered questions as to the amount of seed per acre and as to the time of sowing, and soil. We always use a common grain-drill that sows fertilizer to plant our buckwheat. We cut it with a common twine-binder and set it up in a single row (not two and two), and leave space enough so the air can get between the bundles. If it gets very dry it can be hauled into the barn like other grain; but we prefer to thrash from the field.

We would advise the man from Nebraska to sow a few acres late, as an experiment, 35 days before the first severe frost. Buckwheat does not ripen all at the same time on the same stalk, and even in 30 days one can get ripe buckwheat on the top of the stalk in the first tuft or bunch, and then the late honey crop will build up the bees for winter. Buckwheat is great for stimulating brood-rearing.

Don't let the millers cheat you out of your pure buckwheat flour, but grind it fine in a common feed-mill and sift it yourself if the millers will not finish the flour for you.

If the crop gets nipped with the frost, cut it the next forenoon or it will shell too much.

Use your own brains to fit the conditions of your own soil and climate, and you can make a success in almost any locality. Let it mature in cool dewy nights if you have such in your locality. I have raised over 40 crops, and in the four articles in GLEANINGS have given my experience.

Medina, O.

I have been a bee-keeper for 35 years, and never saw my bees carrying in pollen on Thanksgiving day until last year. Is this common in this latitude? The pollen was of bright orange color. I could not tell what it was from. F. LANGDON.

Langdon, N. Y.

[No.—ED.]

HEADS OF GRAIN

FROM DIFFERENT FIELDS

INCREASE BY SHAKING; WHAT TO DO WITH THE OLD QUEEN.

I wish to get a moderate increase and as much comb honey as possible. I thought I had found just exactly what I wanted in GLEANINGS, June 1, page 334, but I found a difficulty in the eighth paragraph, second column of that page, as I have no nuclei. What I contemplate doing is this: Move the old hive to one side; place a new hive, with full sheets of foundation, on the old stand. Place the super of the old hive on the new hive on the old stand; brush or shake the bees off on the alighting-board in front of the old stand, and place the brood-comb in the old hive on the new stand.

I have made arrangements to procure untested queens for these divided hives. Now, where am I going to get bees to feed my brood in the old hive on the new stand, and to protect my new queens which I shall place in the old hive at time of dividing? Should I place one frame of brood with the bees on it in the old hive on the new stand? If so, should my old queen or new queen be on these frames of brood in the old hive?

I may add that, in the "Conversation with Doolittle," page 334, the questioner states, "I have no nuclei prepared. Would a frame with bees and queen from a weak colony do as well?" I have no weak colonies. I do not think it is necessary for me to state the great obligation I shall be under to you for the courtesy of a reply to this letter.

Mr. Markham advised me to divide the hives about June 15. I shall have queens ready at that time.

Ypsilanti, Mich. L. E. C. THORNE.

[The plan of procedure as outlined at the close of your first paragrph is entirely feasible—indeed, the one that we would recommend under the circumstances; but you must not brush or shake *all* bees off from the brood-combs, because there must be some left to take care of the brood that is put on another stand. If you prefer, you can put a frame of brood and bees with the queen in the new hive on the old stand. As a matter of fact, that is where the queen should go. The parent hive that is made queenless by the procedure, and now on another stand, may be now given one of the queens you are expecting to receive through the mails.

Referring to your next to the last question about taking brood from weak colonies, we may say it does not make any difference whether the colony from which such brood is taken is strong or weak. The querist's idea doubtless was to avoid weakening a strong colony at the very time of the year when it is very essential for it to have every element of strength that it can possess. For that reason he suggested taking the brood from a weak colony that would not be able to do much in the way of getting honey.—ED.]

SHIPPING BEES IN CARLOAD LOTS.

We shipped a carload of bees to Greenville, Miss., early in April, and over half of the time the weather was favorable. The shipment went through in 39 hours. Screens were placed over the entire tops of the hives, and those hives that were crowded with bees were supplied with an empty super between the brood-chamber and screen. Mr. Johnson, the one who owned the bees, and who went with them on the car, had previously placed a drawn comb filled with water in each hive. The car left here at 9:30 P.M., all of the hives having been loaded that same day except 35 which were put in the previous evening.

The hive-bodies were fastened to the bottoms with staples, and the entrances closed with slats. There was an aisle through the row of hives in the car, and there was no straw on the floor. New supplies and extra supers were between each row of hives.

There was some leakage at destination because of the strip at the back of the bottom pulling loose in some of the old hives. Mr. Johnson thinks it better to nail this strip into the hive to make it stronger for shipping.

We were caught in a heavy rain at night with six wagonloads of bees; and the covers not being on hand, some of the bees drowned. One week later we shipped them to Kankakee River in a stock-car in which there was a plentiful amount of hay on the floor. We had hot weather while loading. One layer of empty hives was put over the entire bottom of the car, and over these was a layer of hives containing colonies. These were screened over the tops, and strips were fastened over the entrances in front. The weak colonies were put at one end and strong ones in the other. We sprinkled well before shipping. An extractor, and sugar and water for feeding the weak ones on the trip and after arrival, were included in the car. We provided extra clustering space over the strong colonies by fastening on a super, screened over the top, allowing the bees to come up through a hole cut in the first screen that was over the hive-body.

Evansville, Ind. VICKERY BROS.

WHY DID ALL THE BEES OF A STRONG COLONY LEAVE THE HIVE IN MIDWINTER?

I had one colony that I transferred from a box into a Danzenbaker hive. This was done at the beginning of white-clover bloom, and the bees were put directly on foundation in the Danzenbaker hive. They filled the brood-chamber with new comb and honey, and finished one super of sections. When this super was removed the colony was very strong. This colony was wintered close to two others in a barn. During the last of January or the first part of February I found that the bees in this hive had left, leaving the combs full of nice white honey. There was not even a dead bee left in the hive. What would cause this? The hive was in a dry protected place, and there were no mice or wax-worms at any time.

Since the above incident I have found that another bee-man had the same thing happen to several of his colonies. The hives were not robbed of honey, for the honey is still in the combs, but there are no bees.

Findlay, Ohio. CLYDE L. GREEN.

[If you moved the bees last fall from their summer stand and put them in the barn where there was more or less light, many bees on bright days would fly out into the barn, escape through openings, and never return. If the desertion was *gradual* it is easy to explain how and why the bees left. If a hive of bees is put into a barn its entrance should communicate directly outdoors.—ED.]

TAKING OFF HONEY QUICKLY TO AVOID ROBBERS.

Mr. Scholl certainly has won the medal for taking honey off the hives rapidly—1000 lbs. in 23 minutes. That is going some, page 1493, 1908. I can not compete with him; but I will give my method of taking off honey. I have the shallow frames, and I use no brush. With the hive-chisel I loosen the cover, raise it a little, and blow a little smoke under it to start the bees down. When they get well started I remove the cover and give them a thorough smoking; then with my chisel I quickly pry the frames loose. I draw a frame out, holding it with my left hand. I give it a quick blow with my right, according to the plan I saw illustrated by Dr. Miller. I hold the frame over the hive so the bees fall on the combs below. I pass the combs to my helper, my daughter, who puts it in the comb-box. I have another one ready for her by the time she has the first one in the box. When all are out she covers the box or super while I remove the super and place the cover on the hive. The combs are removed so fast that the bees have no time to take in the situation. Before the honey is off and the hive covered, we have gone to the next colony. The work is done so rapidly the robbers have no time to get started. The honey is stacked in the extracting-room until all is off, when we do the extracting. In taking off the honey, the first super taken off holds combs from the second colony, and so on. When the combs are extracted they are hung in the supers and put back on the hives about sundown. T. W. MORTON.

El Dorado, Missouri.

SPLINTS ALL RIGHT IF USED RIGHT.

On p. 320 Swan Anderson speaks against Dr. Miller's splints. He is at fault, not the splints. He should know that the bees would gnaw the splints if they project below the foundation. Dr. Miller has foundation enter the bottom-bar. I have had excellent results with splints. I do not split the bottom-bar, but I wax the foundation to the bottom-bar the same as to the top-bar. If foundation is cut just the width to fit the frame from top to bottom, and the edges are then fastened with melted wax to both top and bottom bars, the bees will not do much gnawing of splints.

Splints, like many another good thing, will prove useless in the hands of those who will not use them properly. I am using a large number of splints this year, and I feel greatly indebted to Dr. Miller for bringing out so useful an article.

Norwich, Ct. ALLEN LATHAM.

IS IT BEE PARALYSIS?

I have been interested in bees for the past fifteen years, and have been very successful in getting a good yield of honey, as well as being very successful in wintering, until the past season, 1908, at which time I had four colonies of bees in the spring which were in fine shape, from two of which I secured about 150 lbs. of extracted honey, which we consider fair. The other two did not gather any surplus honey to speak of, and seemed to be affected in some manner, and finally dwindled away and died during the winter, leaving nearly all of the combs partially filled with honey. The two other colonies began to dwindle later in the season. About the end of the honey-flow, which is about the first of October, there would be large numbers of bees crawling around on the ground, and some small clusters in front of the hives. The last two colonies, if they may be called such, I succeeded in wintering, but in such a weak condition that they will be unable to build up without considerable help. I have visited every person who keeps bees, whom I know of in this section, and I think I know nearly all that are interested in bees; and the trouble, whatever it may be, has affected this whole section for at least five miles around. I have visited several apiaries as follows: First, one of 21 colonies, all dead except one, which is in very bad shape; another of 12 colonies; another of 17 colonies, all dead; another of 12 colonies, all dead except four, which are in bad shape, and three other apiaries of about 30 colonies, where the losses are not so great, but the colonies are very weak, and on the other portion of the affected territory. These were the conditions in the spring of 1908 and 1909.

Some attribute it to the placing of some sort of crude oil on the marshes by the city authorities to kill mosquitoes; others to the spraying of fruit-trees when in blossom; but I have not as yet been able to trace the cause, but will get more bees this season for the purpose of trying to find the cause, which, unless it is abated, will cause us to suffer a serious loss of both honey and fruit.

Hugenot Park, New York. O. W. BEDELL.

[There seems to be a possibility and even a probability that your bees have what is known as bee paralysis. When a colony is affected with this disease its bees will be seen crawling out around on the ground in small groups in front of the hive. They are very much swollen, shiny in appearance, and every now and then will exhibit a sort of tremulous motion of the legs or wings, hence the name.

It is hardly probable that the oil on the marshes to kill mosquitoes has any thing to do with the matter. If the spraying of the fruit-trees with poisonous mixtures were responsible there would be no dying of the bees except during the spraying season. As we understand it, the malady, whatever it is, continues unabated from month to month. If so, this only strengthens the theory that your bees have what is known as bee paralysis. The Poppleton cure has given good results, and you will find this given very fully in our booklet, "Bee Diseases."—ED.]

BITTER COMB HONEY; WHAT TO DO WITH IT.

I find my honey is very bitter, unsalable—in fact, uneatable. One of my good neighbors says it is caused by horsemint and blackgum. I don't know the cause; but what I want to know is a remedy. Is there any way to make the honey fit to eat?

Reform, Ark., May 31. BYRON FRENCH.

[There is nothing you can do with this honey except to keep it off the market and off the table. We would advise extracting it out and feeding it back in early summer for stimulating brood-rearing. There is no remedy to apply.

If there is bitter honey to be gathered, and it is not actually poisonous, the bees will get it. There is no way that you can make it sweet or palatable. The suggestion has been made that a dark honey might be run through pulverized charcoal to lighten its color, but this would in no way affect its flavor, and probably not very much its color.

This bitter honey should be kept out of the hive during the winter or early spring, as it would, in all probability, induce dysentery.—ED.]

LESS HONEY UNDER EXCLUDERS.

Replying to Stray Straws, page 223, April 15, I would say that last year I used excluders on all my hives, and in the fall found that about half the colonies needed stores. I fed them, and every colony came through in nice shape. L. C. TAYLOR.

Gibsonburg, O., Apr. 23.

A COLONY WORKED ON THE ALEXANDER PLAN FOR INCREASE AND HONEY.

Colony No. 1 was very strong, and last Wednesday, May 19, I decided to divide it on the Alexander plan, as described in your A B C book, page 279. I followed your plan very carefully, and yesterday I looked over both hives. I forgot to mention that I gave the new hive or lower chamber six brood-combs of last year and four frames of wire foundation; full sheets, and a frame of brood with the queen.

Well, on looking them over yesterday I found the queen in the lower hive had done nothing, while in the upper hive I found six queen-cells (not yet capped). Accordingly I separated them, putting the old hive on a new stand. Did I do the proper thing in separating them? The new hive on the old stand is flying strong, having all the field bees, while the old hive on the new stand, having the queen-cells, is inactive. Locust-trees are yielding heavily, and the bees are filling the hives.

Please advise me what to do. Shall I leave them apart as they are, or would you put them together again? If you advise the former, shall I leave them to hatch the queen-cells or give them a queen? If I leave them as they are, will both hives of bees store any surplus this season? When shall I give them supers?

Cincinnati, Ohio. ALBIN PLATZ.

[You did right in removing the upper story to another location; indeed, this was in conformity with Mr. Alexander's directions. With regard to the queen-cells, you can leave them all in the hive but one, provided the queen on the old stand was a good one; otherwise we would recommend killing all the cells and giving the colony a cell from some select queen, or, better still, introduce a young laying queen.

Both hives may store some honey. It will all depend on the season and the management. It is usually time to put on supers when the bees begin to build on new wax on the tops of the brood-combs.—ED.]

WHAT SYRUPS ARE SUITABLE FOR FEEDING.

In your A B C book, page 199, you say there are certain grades of molasses and sorghum that may be used as feed for bees. I should like to ask what those grades are. What about feeding raw beet sugar? Now, my feeding will all take place when the weather is warm enough for the bees to fly on an average of four out of five days in February and March. What I want is not something for the bees to use up as winter stores, for that is a very small consideration here, but something to live on in the early spring and summer when a late frost or a drouth has interfered with the honey flora. A. C. HARRIS.

San Antonio, Texas, May 29.

[Almost any molasses or sorghum that makes a good table syrup would be suitable for feeding bees to stimulate brood-rearing during the late spring or warm weather. Any syrup from the sugar cane would answer an excellent purpose providing it was not burned in the process of making. But we would not advise, as a matter of economy and safety, giving the bees any food for winter except first-quality light honey or syrup made from the best granulated white sugar. It would not be advisable to feed raw beet sugar, although a raw unrefined cane sugar will do very well.

Any syrup containing glucose or so-called corn syrups should never be given to bees.—ED.]

WOULD BLASTING IN THE VICINITY OF A BEE-YARD DISTURB BEES?

There is to be a tunnel built near my apiary, and I should like to know if the blasting will hurt the bees. I am told it will kill unhatched chicks. Do you think it will injure or kill the brood or bees? also do you think I could collect damages in such a case?

Surrey, Cal., May 19. J. W. KALFUS.

[We do not think that any blasting of the sort mentioned would have the least effect upon the bees. It could not begin to shake up a yard as much as heavy freight trains that go thundering by our own apiary of four hundred colonies at Medina. We can feel the ground shake for some distance from the road. We have never discovered that our bees paid the least attention to it.

Very often hives are located in an apple-orchard where apples are constantly dropping upon hive-covers. While the fall of the fruit occasionally brings out a few bees to the entrances it has no other effect. Apparently they seem to take it as a matter of course.

We do not know much about the chicken business; but it is a safe guess to say the embryo chicks would not be affected by the disturbance mentioned.—ED.]

WHAT TO DO WITH DARK BITTER HONEY IN SECTIONS.

I should like to receive your advice on the following proposition that somewhat upsets my calculation: I was patting myself on the back for the showing my bees made for the last ten days or two weeks, as most of them have two supers nearly full. I took out a few sections that are completely sealed, and that honey is so bitter it is not fit to eat. This honey must be from honey-dew instead of blackberry blossoms, as I thought it was. What can I best do with it? I do not want to sell it to my regular trade. If it was in frames I could extract it. As the stores in the hives for next winter are undoubtedly of the same kind, shall I run any risk of losing my bees by leaving it to them?

Fredericktown, Mo. JAS. BACHLER.

[There is not much you can do with these dark sections containing bitter honey except to melt them up, using the wax that you get, and feeding back the honey for brood-rearing. It would certainly be a mistake to sell it, as the cry would be raised right away that it was manufactured. Dark or bitter honey in the comb—in fact, almost any dark honey, except buckwheat, in sections, if it has a poor flavor—does a great deal of damage to the market for first-class white honey in sections.

There might be some risk in your attempting to winter your bees on the same quality of honey in your regular brood-combs. As a matter of precaution we would advise extracting it all out in September, if they do not use it up in brood-rearing, and feeding sugar syrup instead, keeping this dark honey for next spring to feed for stimulating brood-rearing. You can feed it out in quite a considerable quantity in the spring or early summer, because the bees would undoubtedly use it all up in breeding, and it would be practically as good as any honey for that purpose.—ED.]

A PROTEST AGAINST UNWASHED FIVE-GALLON CANS, EITHER NEW OR OLD.

Mr. Allen Latham's point against new unwashed honey-cans, March 1, p. 129, is well taken, especially in view of the fact that we are pushing the merits of honey as a pure food. Let us be consistent and clean. The round cans are, obviously, more sanitary than the square, having no corners; and if they were made with wider openings, so that a person's hand could be inserted for the purpose of wiping it dry with a clean cloth, no water could remain any way, and thus that question would be settled. The cans might be made like the five-gallon milk-cans used hereabouts, with a wide mouth, and closed with a wooden plug, sealed with rosin when shipped, instead of the screw cap now in use. Of what benefit is it to put up the honey in carefully washed, attractive, flint-glass jars, if we have to take it out of unclean cans?

At the canning factories the cans that are used in preserving fruits and vegetables are not washed; but one has the satisfaction of knowing that any germs they may contain have been thoroughly cooked, and possibly rendered harmless; but honey, being a "raw" commodity, has not this advantage to commend it. Give us clean cans by all means! J. B. LEVENS.

Malden, Mass.

BEES GOING AFTER ARTIFICIAL POLLEN IN CHICKEN-COOPS.

Reading your editorial, April 15th, page 221, in regard to chicken-coops being visited by bees, reminds me that we had a similar experience a few weeks ago, though in this case our bees bothered our own chickens. We fed cracked corn, and the bees were after the meal that was not sifted out. They went into the coops, and into the pails of feed left uncovered on the coops. They were quite annoying until some second-grade flour was put out for them. I have kept chickens (White Wyandottes) for five years, and do not remember having had a similar experience before this spring. MARY S. ANDREWS.

Farina, Ill.

COW PEA; IS IT A GOOD HONEY-PLANT?

I should like to know whether you or any of the readers of GLEANINGS have ever had any experience with cow peas as a honey-plant and for stock. If you do not know, I should like to hear from some of the readers. C. W. BARR.

Florence, Kan.

[We know little about this plant, except that it yields some honey in some of the Southern States. We should be pleased to hear from any who can give the information.—ED.]

THE ALLEY TRAP FOR RESTRAINING SWARMS.

I should be pleased to know to what extent the drone-trap has proven successful in preventing the swarm from leaving. I have but one colony to start with. I am on a rural mail route—leave at 9 A.M. and return at 4 P.M. If the bees would swarm soon after I start, would they stay on the outside of the trap until I return? Would there be any danger of their killing the queen if left there too long? J. C. KANAGY.

Belleville, Pa., May 31.

[The drone-trap has given excellent results for catching swarms. We see no reason why you could not attach one of them to a hive from which you expect a swarm; and even if such a swarm came out during your absence on your route, it would not leave, because the queen would be caught and confined in the upper chamber; then you could divide the colony on your return, because it would not do to let the bees make the second attempt or they would kill the queen. We think it would be better for you, rather than to depend on the trap, to practice one of the several "shook-swarm" methods. That advocated in Mr. Doolittle's book is most excellent if we may judge by the reports that have been received.—ED.]

WORKING WITH BEES BRINGS ON SNEEZING-SPELLS.

Mr. Root:—I have been keeping bees on a small scale for the last ten or twelve years; but at present I can't go near a hive without being strangely affected. It is something dreadful how I suffer. I sneeze and cough; water runs out of my eyes, and I suffer just like a person affected with asthma. Is there any thing I can do to stop this?

Troy, N. Y., April 7. WM. J. HAYES.

[There is a sort of hay fever that comes on in early summer when it becomes very hot, and there is another that attacks the individual in late summer. We do not think the bees have any thing to do with either. It is the season of the year, the weather, and the person. Does not our correspondent find that he is worse affected at some portions of the year than others?

Then, again, there are some who will have a sneezing-spell whenever they get into the hot sun. Possibly our subscriber is one of that kind; and if his bees are out in the open he would naturally sneeze when he goes among them.

Perhaps there are some physicians among our number who would be able to throw light on this question. —ED.]

SHOULD THE NOTCHED CORNER OF THE ONE-PIECE SECTION BE PLACED UP OR DOWN IN THE SUPERS?

On page 263, May 1, Mr. Wesley Foster discusses the different ways of placing sections in the supers. I always put the joint up, so that the bottom of the section rests flush on the holder, thus avoiding excessive deposits of propolis. In some sections the lock-corner notches are a little too deep, so that the ends project beyond the corner, making a little space for the bees to fill with propolis. On this account I have found that I can remove the section much more easily when the joint is placed at the top.

I had a boy who put up a lot of my supers, and he put in the sections regardless of whether the joints were at the top or bottom. I let them go as they were, and out of twelve supers I broke some twenty sections; and after that, out of four thousand sections that I put in myself, I had almost no trouble. A. N. COOK.

Woodhull, Ill.

[If the sections are not nicely filled out after the harvest, the bottom of the section (or what was the top while in the super), will be a little fuller. When the notched corner is put down in a shipping-case or on the counter the section will have an upside-down appearance, for it would not do to put the notched corner up.—ED.]

COMB BUILT IN DEEP SPACE UNDER FRAMES.

With a 2¼-inch space below the bottom-bars my bees built comb below the frames in every case. I now intend to reduce the space to one inch and try that.

Marblehead, Mass. P. R. RUSSELL.

[It is a fact generally admitted, that bees will build comb down to the bottom-bars better when there is a deep space under the frames. Dr. Miller has called attention to this, but he found it necessary to use a dummy under the frames at certain seasons of the year to prevent the building of comb *under* the bottom-bars.—ED.]

OUR HOMES

BY A. I. ROOT.

Thou shalt not kill.—EXODUS 20:13.

Blessed is the man that endureth temptation; for when he is tried he shall receive the crown of life which the Lord hath promised to them that love him.—JAMES 1:12.

Ever since I had the Indian Runner ducks I have had a longing for some more. Mrs. Root and the neighbors, however, have objected because the ducks are so inquisitive, and go everywhere. Since we have had our orchard (of about an acre) fenced in with poultry-netting this objection does not hold —or at least the ducks would get along very well inside of an acre inclosure until they are fully grown unless there are too many of them. A lady who writes for the *Poultry Advocate* voices my feeling in regard to little ducks. Here is what she says:

Just now the little daughter and I are much occupied with the care of two wee ducks, which we have hatched in one of the incubators, much to the disgust of the "Boss." This is our first experience with ducks, and I fear it will prove a short, sad experience, as we know nothing whatever concerning the care of them. But if care is all they need they certainly ought to thrive, as we can not let them alone for more than fifteen minutes at a time. They are certainly the cutest, smartest little fellows that we have ever attempted to raise. If they should be so fortunate as to live I fear that the promise which was made relative to Thanksgiving, when the eggs were smuggled into the incubator, will mean either a broken word or a broken heart (or hearts).

Well, I ordered a setting of duck eggs. I shall have to explain that this season, so far, our forty or fifty hens seem to insist on laying in just two nests. I try to have at least a part of them lay in other places, but they have a particular fancy for those secluded nests upstairs in our two Philo poultry-houses. See picture on page 638, May 15, 1908.

By the way, there is a good lesson here in regard to hens' nests. I am sure a flock of poultry will give more eggs if they have a place to lay according to their own notions. It is the *happy* hen that lays the eggs. When a hen feels the laying impulse she is very fond of going off somewhere by herself out of sight. One of the poultry-journals suggests that, if you want to cure fowls of the egg-eating habit, you should give them nests somewhere away back in the dark. Well, this upstairs to the Philo houses seems just the place, and I frequently get ten or a dozen and sometimes *fifteen* eggs out of one nest. A few hens will begin laying at five in the morning, and occasionally there will be an egg laid as late as four in the afternoon. Well, now, this house works very nicely so far as gathering the eggs is concerned. You do not need to stoop over. You just raise one panel of the hinged roof, and reach in and take out the eggs. If, however, you wish to set a hen, she has got to be lifted out of this upstairs room and induced to be contented somewhere else. You can not have a sitting hen in the same apartment where a dozen other hens are laying every day. For the above reason I placed a sitting hen in a big drygoods-box with feed and water, and some china eggs, about a week before my duck eggs arrived. When I changed the china eggs for the duck eggs the hen received them all right, and has been sitting about a week. Then I concluded I would let her out to get a bit of grass, take some exercise, etc. I have done this frequently without trouble—that is, after a hen has been confined to her nest for about a week she will generally go back then of her own accord. But this hen with duck eggs, as soon as she was let out, went back to her old nest upstairs. I took her off the nest toward night, and in order to get her back on her duck eggs gently I waited till after dark.

I lifted her up carefully, and was congratulating myself that she was going to behave nicely; but when I got half way over to her box she began to kick and squall. As this alarmed all the rest of the poultry I shut off her wind gently; but by the time we got to the box she was kicking and striking, and flapping with her wings, and tearing around at a great rate. By the way, what a great amount of muscular strength there is in a good healthy hen! I succeeded in getting her into the box and closing the door. She went off to the further end, and set up a big cackling. I concluded, however, she would soon quiet down, and go over and sit on the duck eggs that had already been cooling off for some hours. I came around several times, but she was still off in the further corner. I tried to reach in and get hold of her so as to put her on the nest; but the box was so large that I could just get my hand in front of her head. She gave me several vigorous "digs" with her bill, but I could not quite reach to get hold of her. Just before bedtime I went out once more, but she was still off in that corner. By means of a piece of lath I pushed her over to where I could get my hand on her; but she was by this time full of fight; and to try to put a sitting hen on some choice eggs while said hen is in such a frame of mind was a rather difficult undertaking. We often hear that "*anybody* can lead a horse up to the watering-trough, but *nobody* can make him drink unless he chooses." I had to give it up. My duck eggs were getting cold, and I feared they would get colder in spite of any thing I could do. In my tussle with the hen in trying to put her on the nest, she scratched my right hand until I noticed it was covered with blood. (While I write I notice five pieces of courtplaster on the wounds she gave me.) I confess that I was very much vexed. She had been in that nest a week, had feed and water right in her box, and ought to have been a happy sitting hen; but instead of that she insisted and persisted in going up into that old attic where she laid her eggs, just to sit on *one wooden egg!*

When she scratched my hand so badly, and was squalling enough meanwhile to raise the neighborhood, I finally caught hold of her legs with my right hand, and then I caught hold of her head with my left hand. Mrs. Root had said, a few days before, that when a good fat hen wanted to sit I might

bring her in for a chicken-pie. So I had a good excuse. But there were my cold duck eggs, and not another hen in the whole flock of fifty that wanted to sit. But, dear friends, it was not the cold duck eggs that held me back from yielding to that terrible temptation to "wring her worthless neck." I told you this was just before going to bed. Well, every night for thirty years or more, Mrs. Root and I have been in the habit of kneeling by our bedside, and asking God to bless the result of our labors during the day, and to bless these human lives he has given us two to live. Had I wrung the hen's neck then I should have done it in anger; in fact, I do not know but I did say out loud, "You miserable old idiot, I have half a mind to twist off your worthless head." But I did not do it. Had I yielded to that temptation, and destroyed that little life that God gave her—the life that only God *can* give—how could I have knelt down and asked God's blessing before I went to sleep? Even though I was angry I was afraid of the consequences of it if I yielded to that temptation.

The first text I have chosen says, "Thou shalt not kill." It does not say we must not kill each other; but it does say, at least to me, that we are forbidden to kill any thing without some good and sufficient reason; but just the fact that we are vexed and angry with a poor mistaken stubborn hen is no excuse for robbing her of the life that God gave. Had I given way to the temptation, and had wrung her neck while my hand was smarting from the effects of her kicking and scratching, I should have driven away the Holy Spirit and destroyed my peace of mind, perhaps for many a day.

Mark Twain once said that it is a bad plan to tell lies, and said he knew it by experience; and I know and God knows that I have found it in years past to be a bad plan to say any thing or do any thing under the influence of anger. I put the hen quietly back into the box and went into the house. I told Mrs. Root about it, and she agreed with me that it would have been a most wicked thing to kill the hen under the circumstances because I was angry. I felt happy because I could kneel down and thank God that I had been prevented from doing *any thing* during that trial.

As soon as I arose from my knees I remembered a half-dozen half-grown chickens roosting on top of that very box. These had been petted so I could handle them without a bit of trouble. So I went out once more and put four of the chickens on the thirteen duck eggs. Next morning, when it was daylight, I found my hen back on her eggs all right. She had got over her fright during the night, and with the first glimpse of daylight she doubtless recognized her surroundings and made the chickens get off.

Let me say a word here about family worship. Sometimes it seems monotonous, I admit, to stop to thank God three times every day, before each meal, and then kneel down again at night before you go to bed. I think I had better confess that, only a few days ago, I began wondering whether it was really necessary to have *so much* family worship. Perhaps I should remark that we always have, also, our Bible reading after breakfast. This makes five times every day that we acknowledge and reverence our Maker. Is it worth while? is all this needful or necessary? I can not decide for you, dear friends; but I am firmly satisfied that it *is* needful and necessary for A. I. Root. Thousands of times during the day have I reflected something in this way: "Now, old fellow, it will be time pretty soon for family prayers, or to ask God's blessing before you partake of your daily food. If you do this can you come to your Maker or before your Maker with that happy feeling of close relationship that you value above any thing else in this whole wide world?"

"The peace of God" (or peace with God) "passeth all understanding." Of course, there are peculiar circumstances where these things I have told have to be omitted more or less. When traveling, or when sitting down in a restaurant or hotel, we can all make a silent recognition of our Maker; and afterward when we are alone by ourselves in a room at a hotel or anywhere else, we can have a daily Bible-reading and prayer—that is, if you remember to take a Bible or Testament with you. I am sure, friends, it is a good investment of time and money.

The incident I have mentioned also illustrates another point: In these lives we are living, there is necessarily more or less strife going on. We get vexed with people as well as with animals, and we are sorely tempted to do unwise things when we are angry. Parents sometimes correct children while they themselves are vexed. Men whip horses and swear at them because they are mad; but let me assure you that it is not only poor policy but foolish policy to do any thing when you are vexed or disturbed. God has seen fit to place mankind at the head of all animate creation. Manhood and manliness are next to godliness. If you wish to demonstrate to all the world (domestic animals included) that you are a *man*, then behave yourself in a manly way. A *boy* may be excused for doing foolish things when he is excited; but as he grows in stature he should grow in coolness and steadiness. He should know when to be careful. A horse can tell in an instant whether the one who comes near him is a man who has good judgment, and controls his temper, and can tell him from the man who is foolish and lacks judgment—or, worse still, gets drunk. A horse will yield to a manly man or to a womanly woman. In the same way, but perhaps in a less degree, so will a cow and all the bovine family. The same is true with chickens. Somebody said in one of the poultry-journals that it is a disgrace to the owner to have poultry that will run away from him and "holler" every time he comes near them or goes into the poultry-yard. Where you have hopper feeding, the hens are much more apt to get wild and act wild, especially if a stranger approaches; and this poultry-jour-

nal said you could make your fowls tame by making it a practice to go into their roosts after dark. Put your hands on them and talk to them. They will very soon learn that you do not always come into their domicil to wring their necks or to "frighten the daylight" out of them. The same is true with sitting hens. You can very soon teach a sitting hen to be perfectly quiet, without any ruffling up of her feathers or striking at your hands, by patting her on the back and talking to her. I know this by experience. When I found it necessary down in Florida to put flea salve on the head of each one of my fowls, I succeeded in getting them accustomed to being handled, in a very little time. With the above illustration I do not believe you will think me superstitious when I tell you it is my firm conviction that the man who has family prayers* every day in his home will not only have better chickens, but he will *make more money* with his chickens and with all the rest of his domestic animals. Godliness certainly is profitable. Well, if this is true with chickens, how much more true is it with the children of the household? The great Master said, "Ye are of more value than many sparrows." The boy or girl who is growing up in your home, and listening to family prayers, is of more consequence than all the chickens in the world. If it pays you to take time and pains to win the confidence of a sitting hen, how much more does it pay to win the confidence, reverence, and respect of that boy or girl! At one time in my life our children, during my absence, wanted to disobey some of my orders. I think it was something I had been very emphatic about. One of my daughters in her letter of explanation said something like this:

"Now, please, father, do not be angry for our having decided to do this."

I think I wrote back something as follows:

"Bless your heart, dear child, have you *forgotten* that your father professes to have 'been born again'? The *old* A. I. Root, of whom you perhaps have a dim recollection away back in your childhood, is, he hopes, dead and buried,† and the new A. I. Root, who has taken his place, can never consistently be angry—at least very long—at one of his own children, and more especially when you have decided that you were fully justified in taking the step you have taken." "He that ruleth his own spirit is greater than he that taketh a city."

Just one more point in closing. We are often tried and vexed by our domestic animals, and sometimes with our neighbors; but when something happens so they are suddenly removed, we are often sadly and painfully reminded that they had good qualities as well as bad. Where a man under the influence of anger takes the life of a domestic animal he often suffers from remorse afterward. But this is nothing in comparison with the remorse that one feels who takes the life of a fellow-being. There is some satisfaction in coming out ahead of your rival or opponent, especially if you kill him with kindness. A vicious sitting hen can be made a friend instead of an enemy, as I have suggested. In the same way a troublesome neighbor may be cured by "heaping coals of fire" on his head in the way of repeated kindnesses. Satan gets into a man's heart, and persuades him that he has been greatly abused; and under such circumstances one might be led to take the life of another. You can scarcely pick up a daily paper without an account of this sort. I suppose very few of the readers of GLEANINGS have had any personal experience of the remorse one feels when he takes the life of a fellow-being. There is a kind of satisfaction in an honest struggle with a rival; but where does the satisfaction come in when he is dead and gone for ever, especially in a case where you have been instrumental, more or less, in taking away that life? Jesus said, "Love ye your enemies; do good to them that hate you; bless them that curse you, and pray for them that despitefully use you." Oh what a glorious thing it is to conquer all the ills that beset us as a nation by spreading the gospel of Christ Jesus! And this reminds me of a letter which has just come through the mails. It comes from the neighbor who has charge of my chickens in my Florida home. See p. 386 of the last issue. Here is what he writes:

SOME GOOD NEWS FROM OUR FLORIDA HOME, AND THE NEWS IS NOT ABOUT CHICKENS EITHER

Mr. Root:—I did not know I was writing for GLEANINGS when I wrote about the "old yellow hen;" but I now send you a few items of vastly more importance. Knowing that you are always interested in religious and temperance work I will give you a little outline of what the Culpepper tent meetings have done for the Manatee section, as the influence of these wonderful meetings (or perhaps I had better say wonderful men) has reached over all Manatee Co., and produced results that are substantial in church and general lines.

There were about 190 who gave their names for church membership in the different churches. The Presbyterian received about 20, the Baptist upward of 50, the Methodist about 75 in Bradentown; in Manatee, the Methodist about 10 and the Baptist about the same, besides numerous additions in Palmetto, Cortez, and Braden River churches.

The temperance standard has also been lifted high. At a temperance meeting on Sunday afternoon they had about 1100 white bows ready to pin on to people who would go up and get them, and they did not have enough to go around. How is that for a place of about 1000 population? But, of course, you understand that people were here from all this section.

A number of our most prominent business men have come out and joined different churches, and two of our drugstores have quit selling whisky, so they say. It means a great deal to our town, which is just getting

*When I say "family prayers" I do not mean lengthy ones such as some of us used to listen to away back in childhood. In asking a blessing at the table it sometimes seems best to have only a single sentence, say something like this: "Lord, bless our food and the undertaking that lies before us. Bless the new day and all it shall bring forth. Amen." And I think that such a brief recognition as the above is better than none at all. Talk to God in your own way, without any effort to copy after other people, and when you go to bed at night, and are tired and sleepy, long petitions, it seems to me, are out of place. After your Bible-reading, which had better be in the morning, when you have the best use of all your faculties, it is often well to take time to remember to ask God's help in the affairs of our State and nation—say the temperance work, getting good men into office, banishing cigarettes, etc.

†Seeing that ye have put off the old man with his deeds, and have put on the new man, which is renewed in knowledge after the image of him that created him.—COL. 3: 9, 10.

on its feet and beginning to grow in every sense of the word. I believe we are going to have one of the cleanest and best little towns right here on the south bank of the beautiful Manatee River that can be found anywhere, and I know that we have a climate that is unequaled the year round. I forgot to mention that quite a number were baptized in the creek at the back of your place. J. E. STANTON.

Bradentown, Fla., June 14.

POULTRY DEPARTMENT

BY A. I. ROOT.

THE "WHITE PLAGUE," ETC., AMONG CHICKENS.

At this season of the year, all the poultry journals are full of articles in regard to the care of *little* chickens; and it has been so much of a repetition—the same thing over and over again, that I finally thought I would not read them any more, but here is something, clipped from the Kansas City *Star*, that is a different story. It is something I can heartily indorse. Read it, and see if you do not agree with me.

While they were repairing the lawn one day at Ernest Kellerstrass' poultry-farm, Eighty-fifth and Holmes streets, in the suburbs of Kansas City, the men noticed that the chicks, the little yellow fluffy ones, insisted upon standing on a pile of sod. Time after time they were driven away, as the sod was needed for use; but a moment later they were back again, apparently more contented than at any former period of their brief careers. Mr. Kellerstrass was interested. A man whose business it is to breed poultry is bound to pay attention to things that would be passed over by any one else. If those little chicks liked sod, Mr. Kellerstrass decided that they should have it. He had no idea then —two years ago—that his decision in a simple matter would be so important that it might mean, literally, millions of lives among chicks.

"So I told the men," Mr. Kellerstrass said one day last week, "to put some of the cool black earth in the brooders, if it pleased the chicks so much. The result was marvelous. Wherever we put the sod-earth the chicks seemed delighted. They grew strong and healthy. We buried their food in the earth and they scratched for it. This made their legs strong and reliable. It was the natural way for them to feed. No other chicks were so thrifty."

A PLAGUE AMONG YOUNG CHICKS.

If there is any ailment in this world which has done more than the white intestinal trouble to increase the mortality rate among chicks, no one has heard of it. Poultry-breeders have to contend against a long list of diseases — roup, canker, bumblefoot, scaly leg, gapes, the pip, leg weakness and breakdown behind—most of them attacking the fowls after they have begun life for themselves. But the white intestinal trouble originated in the brooders among the chicks from the incubators—the route most frequented in these high-pressure days by the stork in chicken society—and it worried the lives half out of the men whose money was in the business. It has been the subject of gossip for generations, too, among old-fashioned hens and dignified roosters who never did have a very high opinion of patent mothers. The United States Department of Agriculture and many staid professors in the agricultural colleges have tried for more than ten years to find a remedy for it, but they failed.

The records show that the white intestinal trouble killed at least 40 per cent of the incubator and brooder chicks between the age of two days and two weeks. When you realize that fully 80 per cent of the country's poultry comes from incubators it is easy to see how important it is to eradicate a malady which killed so many.

It was an accident. Mr. Kellerstrass thought only of adding comfort to the lives of the brooder chicks when he covered the floors with the sod earth, and made them scratch for their food. But the result was surprising. In 1907 he raised 96 per cent of his chicks instead of only 60 per cent, as previously, and in 1908 he increased the product to 98 per cent. In 1907 he produced 8500 chicks, and last year 8000. Without a doubt he had found a remedy for the white intestinal trouble.

HERE IS THE SECRET.

"This is the cause," Mr. Kellerstrass said: "The chicks are put in the brooders when two days old. They are kept there for two or three weeks. These brooders have hard-wood floors. The floors cause leg weakness, which brings on kidney trouble, followed in its turn by the white disease, and that by death. Probably 30 million chicks a year die that way."

The remedy satisfies Mr. Kellerstrass. In the fall he hauls thirty or forty loads of solt black dirt. This is screened until it is clean and clear. When the first chicks come from the incubators in the late fall Mr. Kellerstrass has the dirt spread on the brooder floors four or five inches deep. The food is buried in it so that the chicks have to scratch to get it. The dirt absorbs the droppings and provides a resilient footing; the chick's legs grow strong, and by the time he is ready to face the world that lies outside the brooder doors he is a worthy, reliable member of chicken society, safe from the white disease.

I have been satisfied for a long while that chickens, big and little—yes, about as soon as hatched—should be on the ground, and on ground outdoors if the weather will admit. But aside from this black dirt I think there is some virtue in sod—especially rotting sods, such as we use for greenhouse work. Chickens love to scratch among the grassy roots, even when they are mere baby chicks. If Mr. Kellerstrass has not discovered a sure remedy for this white plague among little chicks, he certainly has got on to something that is reasonable and all right, no matter what the trouble is.

ANIMATED EGGS — SOMETHING FURTHER ABOUT MY "DISCOVERY."

Mr. A. I. Root:—In regard to animated eggs, page 21, June 15, "a wonderful discovery," what you say about placing a well-fertilized egg on plateglass has been known to the writer for some years. Should the embryo chick be taking a "nap" it will "wake up and take notice" if a drop of ice-cold water be put on the egg. An egg containing a strong chick will also bob around if placed in a pan of lukewarm water.

LeMars, Iowa, June 19. G. A. C. CLARKE.

Thanks, friend C. But how does it come that neither you nor anybody else ever thought to mention this in print? I have ransacked our books on poultry, just as I did years ago, when this journal was started, on bees; and I have also gone through a haystack of poultry journals; but so far I have never found any such thing mentioned in print.

ANIMATED EGGS; A RIVAL TO OUR INVENTION IN THE FIELD.

Friend Root:—You mention animated eggs in your Special Notices. I have for years practiced taking eggs from under sitting hens (generally having set three or more at the same time), on or about the 15th day; and by putting them in a deep basin of water, heated to about blood heat, I detect the eggs having live chicks by their movements, as the struggles of the chick inside the egg make it wobble as it floats on the water.

Allenville, Ala., June 18. H. F. HART.

Many thanks, friend H., even if you are taking a part of our laurels. Your plan would certainly be the cheapest way to test eggs. There would be one great objection, however. If you have to wait until the 15th day, the eggs tested out would hardly be fit for culinary operations. Another thing, it seems to me (without having made a test, of course) that some of the eggs having no live chickens in them might not "wiggle" at just the time of your experiment; and I suppose you would not want to leave them in the water very long. Notwithstanding, your communication

furnishes another important contribution to the scientific part of incubation.

POULTRY SECRETS; HOW GLEANINGS ENABLED A WOMAN TO SAVE HER MONEY.

I want to tell you how much I enjoy your writings, and how much good they have done me. I feel as though I were listening to one who had my individual welfare at heart, and read between the lines. I want to thank you personally for every one of them, past and future. Your poultry talks have been a great help to me also. At one time I was just going to send off for a "secret" which you disclosed just in time—in fact, I had the letter ready to send, when I received GLEANINGS; and, as usual, I glanced over your writings and happened to see your disclosure of the secret.

Ranch Vigo, Tex., May 2. MADELINE E. PRUITT.

There is one point in the above letter that strikes home to me. This good woman says she feels, in reading my talk, as though she were "listening to one who had my individual welfare at heart." Now, if our various poultry journals would only feel the same way toward those who subscribe for them, how much better it would be all around! Just think of not only permitting but abetting this foolish business of asking a dollar of each of a hundred people for a secret when that same secret could be printed for the benefit of all the subscribers, in a space not much greater than the advertisement of it occupied! How is it—are poultry journals printed in order to help along swindles? or are they printed for the benefit of those who subscribe and pay their money?

YELLOW SWEET CLOVER BLOOMING THE FIRST YEAR.

In our issue for June 1, page 26, I mentioned the fact that we had purchased a ton of yellow-sweet-clover seed, and on page 21 of the June 15th issue the question was asked about sowing sweet clover among corn at the last cultivation. Well, to-day, June 14, one of our employees, Mr. Philip Boley (the "duck man" I have mentioned before), brought me a stalk of yellow sweet clover five feet tall, covered with bloom. He said this came from seed that he sprinkled along the roadside last November. He can not tell whether the seed came up last fall, and made root enough to winter over, or not. He only knows that, when he saw it this spring, it was making a tremendous growth; and now it is not only up to a man's chin, but is full of bloom and covered with bees. I was aware that yellow sweet clover blossoms much earlier than the white; but I did not suppose it was possible to get such a growth and yield of honey in so short a time. He says that horses that go past there eat it readily. Please remember this seed was not sown on cultivated soil, and there has been no effort made to cover the seed in any way. It was just scattered along the roadside, along his own premises, of course. Can others tell us more about sowing it late in the fall, and its early blossoming?

By the way, friends, where can you find a forage crop that will be five feet high in the middle of June when the seed was thrown only on the top of the ground in November? For feed I can not believe there is any thing more valuable; and from what experiments that have been made in using this plant to plow under for green manuring, I do not know of any other that has its equal. The question is, "Can this result be duplicated?"

RATS AND MICE, AND WHAT IT COSTS TO BOARD AND LODGE THEM.

Perhaps you have noticed statements in the papers, especially of late, about the damage that results from rats and mice. When I was first told that it was more than a million of dollars I thought it incredible. A little later a statement appeared to the effect that it was *several* million; and now we have a government bulletin, just issued, that declares that recent careful statistics make it quite probable that our rats and mice cost us almost if not quite a HUNDRED MILLIONS OF DOLLARS annually. This bulletin contains 54 pages, and it ought to be read and studied by every man, woman, and child, not only in our own country, but throughout the whole world. The matter just now is attracting more attention, and assuming more importance, because, aside from the *hundred million dollars* that it costs us in money, rats are found to be a most prolific source of propagating contagious diseases. It is a disgrace to any home or to any neighborhood to have rats and mice breeding and peopling the world. Mrs. Root was congratulating us two or three days ago that she had not seen a rat or mouse on the premises since we got back from Florida. Last night, however, I found rats had got into our apple-cellar and "chawed up" the few remnants of a peck of apples. We considered this cellar as ratproof; but careful investigation showed that the rat had worked a hole through from an underdrain close up to the wall. I mixed up some cement in a hurry, and made a good job of stopping up the opening. Now, this bulletin states that the great highway of rats is sink and drain tiles, and directs that all the openings or outlets from tiles and sewers be covered by good strong galvanized wire cloth, close enough so that no rat or mouse can get through. Another important matter is that nothing should be left lying around loose that rats and mice can subsist on. Here is a paragraph that hits our establishment most emphatically. Let me quote:

Another important source of rat food is the remnants of lunches left by employees in factories, stores, and public buildings. This food, which alone is sufficient to attract and sustain a small army of rats, is commonly left in waste or other open receptacles. Strictly enforced rules requiring all remnants of food to be deposited in covered vessels would make trapping far more effective.

We have between 200 and 300 employees just now, and most of them bring their dinner. I have repeatedly exhorted our workmen to be careful about baiting rats and mice by throwing remnants of their food around at the noon hour. Let me repeat what I have said before: Do not bring your dinner in a basket. Have some sort of dinner-pail with a tight-fitting cover. Spread out a newspaper where you eat your dinner, and brush

Continued on page 17, Advertising.